



Report and Recommendation of the President to the Board of Directors

Project Number: 39225
October 2009

Proposed Asian Development Fund Grant Kingdom of Bhutan: Road Network Project II

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 October 2009)

Currency Unit	–	ngultrum (Nu)
Nu1.00	=	\$0.12079
\$1.00	=	Nu48.1050

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
BAS	–	Budget and Accounting System
CDB	–	Construction Development Board
CDC	–	Construction Development Corporation
DoR	–	Department of Roads
DPA	–	Department of Public Accounts
EFRC	–	environmentally friendly road construction
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
FYP	–	five-year plan
JICA	–	Japan International Cooperation Agency
MoWHS	–	Ministry of Works and Human Settlement
NCB	–	national competitive bidding
PIU	–	project implementation unit
PMO	–	project management office
PPTA	–	project preparatory technical assistance
PRR	–	Procurement Rules and Regulation
RNP	–	Road Network Project
RSTA	–	Road Safety and Transport Authority
SOE	–	statement of expenditure
SQCA	–	Standards and Quality Control Authority
TA	–	technical assistance
TOR	–	terms of reference
VOC	–	vehicle operating cost

WEIGHTS AND MEASURES

dbh	–	diameter breast height (standard forestry measure of tree trunk diameter)
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NOTES

- (i) The fiscal year of the Government and its agencies ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2009 ends on 30 June 2009.
- (ii) In this report, "\$" refers to US dollars.

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GRANT AND PROJECT SUMMARY

Borrower	Kingdom of Bhutan
Classification	Targeting classification: General intervention Sector (subsector): Transport, and information and communication technology (road transport) Themes (subthemes): Economic growth (promoting economic efficiency and enabling business environment, widening access to markets and economic opportunities), regional cooperation and integration (trade and investments) Location impact: Rural (low), national (high), and regional (high)
Environment Assessment	Category A An environmental impact assessment was undertaken. The summary of the assessment is circulated to the Asian Development Bank (ADB) Board of Directors separately.
Project Description	<p>The Project will upgrade or construct five critical sections (about 180 kilometers [km]) of the southern east–west highway, including (i) Manitar–Raidak, (ii) Raidak–Lhamoizingkha, (iii) Panbang–Amshingwoong (Nganglam), (iv) Tsebar–Mikuri–Durung Ri, and (v) Samdrupcholing–Samrang. Consulting services will be provided to prepare detailed design and support implementation of the civil works. These proposed road sections provide access to the border crossings and have significant regional implications. Road improvement and construction works under the Project include construction of roadways, including longitudinal drainage structures, installation of culverts and bridges, construction of new bridges and cross-drainage structures, and structures for resettlement and rehabilitation.</p> <p>The Project will also enhance overall sector management capacity by providing (i) equipment necessary for the Royal Government of Bhutan to enhance sector capacity in areas such as (a) quality survey, design, and construction, (b) road safety, and (c) control of overloading and vehicle emissions; (ii) on-the-job training for social and environmental requirements through detailed design and construction supervision consultants; and (iii) technical assistance (TA) to support the capacity building of the Department of Roads (DoR), including (a) enhancing knowledge of and skills in modern road technologies, especially with environmental considerations; and (b) enhancing and optimizing the road asset management systems.</p>
Rationale	Accessibility is Bhutan’s key development issue—the trunk road network is dependent on a single east–west national highway running through the northern part of the country. The absence of a similar east–west highway running through the south has constrained travel in the southern part and hence development opportunities, including potential trade with India. Limited

provision of feeder roads adds to the isolation of remote southern rural areas. The proposed Project will construct critical sections of the southern east–west highway, which will facilitate industrial development in the southern areas and integrate them more effectively with their primary markets in India.

The DoR, which is in charge of road development and management, is limited by traditional road-building technologies, which often lead to cost and time overruns in project delivery. For efficient and effective road asset development and management, the DoR needs to be equipped with knowledge, skills, and tools for the use of modern technologies in planning, survey, design, and construction, especially with regard to environmental considerations. Improved road safety and control of overloading and vehicle emissions are also required for the safe and efficient use of road assets with minimal adverse environmental impacts.

Impact and Outcome	The Project will increase passenger and freight transport within the country and with India, facilitate industrial development in the south of the country, a remote area with a high poverty incidence but high agricultural and industrial development potential. It will also integrate the south more effectively with its primary markets in India. The Project will expand the road transport network in the southern region, providing a major internal transit route for Bhutanese passengers and goods (i.e., an alternative to the existing east–west national highway running through the northern part of the country), connecting to border crossings with India.
Project Investment Plan	The investment cost of the project is estimated at \$54.32 million, including taxes and duties.
Financing Plan	It is proposed that ADB provide a grant of \$38.76 million equivalent from its Special Funds resources, inclusive of a \$10.00 million grant from the subregional pool of the Asian Development Fund. The Government will finance the remaining local cost of \$15.56 million equivalent, or 28.6% of the total cost, including taxes and duties, land acquisition, remuneration of counterpart staff, office accommodation, and other miscellaneous costs.
Period of Utilization	30 June 2015
Estimated Project Completion Date	31 December 2014
Executing Agency	Department of Roads (DoR)
Implementation Arrangements	The project management office (PMO) will be headed by a full-time project coordinator at the executive engineer level, supported by adequate technical and administrative personnel. The PMO will be responsible for (i) overall coordination, management and monitoring of the Project, (ii) supervision of detailed engineering

design, and (iii) procurement. In addition to the PMO, two site offices shall be established to be responsible for monitoring day-to-day implementation of the Project and preparation of project progress reports, each to be headed by a project manager at the assistant engineer level.

Procurement

Procurement under the Project will be carried out in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time) and the Government's tender procedures acceptable to ADB. The civil works contracts will be procured under international competitive bidding with domestic margin of preference. ADB is currently updating the list of countries eligible for domestic preference, which will be issued shortly. If Bhutan is not on the updated list of eligible countries at the time of bidding, the domestic preference referred to elsewhere in this report will not be applicable to this Project.

The Project will provide \$1 million for equipment to be procured and will follow international competitive bidding procedures if the estimated contract is valued at more than \$500,000, national competitive bidding procedures if the estimated contract is valued between \$100,000 and \$500,000, and shopping if the estimated contract amount is less than \$100,000.

Consulting Services

Two international consulting firms will be recruited: one for detailed design and procurement assistance, and another for construction supervision of civil works under the Project. The DoR will select and engage the consultants in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time).

For detailed design and procurement assistance, about 34 person-months of international consultants and 32 person-months of national consultants will be required. For construction supervision, an estimated 28 person-months of international consultants and 604 person-months of national consultants will be provided.

Project Benefits and Beneficiaries

Improving management of the country's road network through the capacity building component and the TA, and the construction of critical sections of the country's trunk road network under the Project, will enhance rural accessibility in the southern area as well as expand the country's trunk road network by providing an alternate east–west link. This will reduce poverty incidence and improve the quality of life in the remote southern areas. It will also integrate these areas with the national and subregional economies through reduced travel time, accidents, overloading, and vehicle emissions. The Project will increase the DoR's capacity for road asset development and management. This will ensure the delivery of more efficient road asset development and management, and higher-quality construction and maintenance,

resulting in decreased recurrent costs in the medium and long term. These will increase the overall level of social and economic development in Bhutan.

Remoteness and isolation are the major causes of poverty in Bhutan. The Project will improve access to socioeconomic services, increase employment opportunities and income-generation activities, and improve transport services. These major positive impacts of the Project will significantly reduce poverty and improve the quality of life in the project-influenced areas covering five *dzongkhags* (districts): Chhukha, Dagana, Pemagatshel, Samdrupjongkhar, and Zhemgang.

Risks and Assumptions

The risk of delayed implementation will be mitigated through (i) the DoR's advance actions and ADB's prior review of procurement, (ii) more hands-on advice during procurement processes, and (iii) on-the-job training on safeguard requirements to the DoR and dzongkhag officials. The DoR will provide required support to dzongkhag offices to facilitate land acquisition.

The risk of ad hoc design changes, which could result in realignment leading to implementation delay, has been minimized through full consultation with local communities and dzongkhag officials. Technical advice will be provided by the consultant under the attached TA and design and supervision consultants on appropriate technologies with environmental considerations, which will ensure projects are implemented in a timely manner and are of high quality.

The risk of inadequate maintenance financing is mitigated with continued support to asset management planning through the attached TA. Sufficient budget was allocated to the targeted length under the 9th Five-Year Plan, and the target length and budget were increased under the 10th Five-Year Plan.

Technical Assistance

In conjunction with the Project, TA will be provided for capacity building of the DoR. The DoR will be equipped with skills in and knowledge of modern road technologies in planning, survey, design, and construction, with environmental considerations. The estimated total cost of the TA is \$500,000, of which ADB will finance \$400,000 on a grant basis from the ADB TA funding program (Technical Assistance Special Fund-IV). The TA consultants will be recruited in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time).

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed grant to the Kingdom of Bhutan for the Road Network Project II. The report also describes proposed technical assistance (TA) for the Capacity Building of the Department of Roads, and if the Board approves the proposed grant, I, acting under the authority delegated to me by the Board, will approve the TA.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Performance Indicators and Analysis

2. In a landlocked country such as Bhutan, socioeconomic development depends largely on an efficient and reliable road network. Since the construction of the 179-kilometer (km) Phuentsholing–Thimphu Highway in 1959, the national road network has expanded to about 4,947 km of motorable roads, including 1,632 km of national highways, 489 km of district roads, 813 km of feeder roads, 150 km of urban roads, 717 km of farm roads, and 560 km of forest roads. This gives a road density of 0.13 km per square km and 7.5 km per 1,000 inhabitants. The km per inhabitants figure is relatively high in comparison with countries of similar size and income level; this is due to Bhutan's low population density. Despite the extent of the present road network, many rural communities remain unconnected. The census survey of 2005 indicates that 9.7% of the population lives more than 6 hours away from the nearest road, and that rural households in six districts comprise 73% of such population. Travel between east and west regions relies on a single east–west national highway running through the northern part of the country, or it requires going through India, especially in southern areas of the country. Only one airport provides limited air access to the rest of the world.

3. Almost all national highways (95%), more than 90% of the district and urban roads, and about 20% of feeder roads are paved. However, road conditions are poor. Narrow roads have been built along steep hillsides prone to landslides. Roads become difficult to use during the winter months and rainy season. Improvement, maintenance, and expansion of the existing road network are urgently needed. Because of the mountainous terrain, the area of land suitable for agriculture is limited and the population of less than 700,000 is distributed in remote settlements. This makes construction and maintenance of roads extremely difficult and costly. The wide use of manual resurfacing has provided low-quality pavement.

4. The Department of Roads (DoR) under the Ministry of Works and Human Settlement has direct responsibility for 2,449 km of road network, comprising 1,125 km of national highways, 419 km of district roads, 805 km of feeder roads, and 100 km of urban roads. DANTAK, an organization under the Army Engineering Corp of the Indian Border Force, has constructed and maintained the country's main road network since 1959 and continues to maintain 12% of Bhutan's main road network under a grant from the Government of India. Farm roads, forest roads, and some feeder roads are managed by the Departments of Agriculture, Forestry and Education, and local roads and mule tracks are the responsibility of local government authorities. The DoR is also responsible for managing the national workforce, which has been primarily employed for force-account road construction and maintenance works.

5. Budgetary expenditure of the DoR under the 9th Five-Year Plan (FYP, 2002–2007, extended to 2008) was Nu7,418 million (\$161 million) against an original budget of Nu6,566 million (\$143 million). The substantial increase in expenditure was due to extension of the 9th FYP to 2008. The average annual expenditure was Nu1,236 million against the original average

annual expenditure of Nu1,313 million, which is 6% underspending. This demonstrates remarkable improvement in the DoR's capacity and commitment. Under the 10th FYP (2008–2013), the budget is 1.8 times (2.2 times on the annual basis) as large as the 9th FYP due to the newly elected government's priority for road rehabilitation and development.

6. Specific charges for road use are taxes on motor vehicles levied by the Road Safety and Transport Authority (RSTA), including annual registration, renewal, and ownership transfer fees, and these were Nu97 million in 2008, increasing from Nu60 million in 2005. In addition, road users pay sales tax on fuel, and custom duties and sales tax on vehicles, which were Nu121 million in 2005 and Nu152 million in 2008. Revenue relating to road use was Nu249 million in 2008, increasing from Nu181 million in 2005, which is absorbed into the general government revenue. The average annual increase was very high at 15.6%.

7. The RSTA of the Ministry of Information and Communications is responsible for all motor vehicle-related activities including registration and licensing and roadworthiness and emission tests. The number of motor vehicle registrations increased from 29,914 in 2005 to 35,703 in 2007, which is an average annual increase of 9.2%. The highest increase was in light vehicles at 13%, and there was not much increase in two-wheelers. Out of 35,703 motor vehicles registered, over 60% were light vehicles and taxis, 20% were two-wheelers, and 13% were heavy vehicles.

8. The RSTA regulates the transport industry and sets tariffs. The tariffs are binding for passenger traffic but considered indicative for freight. Large transport contracts are generally contracted out by industries in open tender to both transport companies and truck owners. The freight transport market is fully competitive. The size of the truck fleet has risen significantly in recent years and increased competition is reported. For passenger transport, all bus services were privatized by October 1999. As of June 2009, the RSTA had 124 bus routes covering 18 dzongkhags (except Gasa and Pemagatshel), currently operated by 35 private operators, excluding city buses, which is above the RSTA public transport target in the 10th FYP of 170 buses in operation. New routes proposed by either private operators or the RSTA will be contracted out through open competition with passenger fares regulated by the RSTA with the direct cost plus operational overhead. Public demand for transport services has been increasing, and the frequency of service has increased and operation hours have expanded. Demands for more routes will further grow with the construction of many new roads. The RSTA introduced measures to encourage private operators to offer better services: waiving of import duty for purchasing new buses, and extending operation contracts to 10 years.

9. The Road Safety and Transport Act of 1999 defines the roles of the RSTA and the traffic police in implementing the road traffic safety rules. The act reflects modern practice and the traffic safety rules are in line with international standards. Despite rapid traffic growth, the number of reported accidents decreased from 1,039 accidents with 22 fatalities in 2005 to 858 accidents with 18 fatalities in 2007. This translates to 5 annual fatalities per 10,000 vehicles, which is low in comparison with lower and middle-income countries, where the range is 5–100 annual fatalities per 10,000 vehicles.

10. The design and monitoring framework for the Project is in Appendix 1. Appendix 2 provides more details of the road sector in Bhutan.

B. Analysis of Key Problems and Opportunities

1. Main Sector Issues and Government Initiatives

11. Despite the expansion of the road network, the coverage and condition of the country's road network needs improving, and the demands of road transport are increasing. One of the major concerns with Bhutan's trunk road network is that the country is dependent on a single east–west national highway running through the northern part of the country. The absence of a similar east–west highway running through the south has constrained travel in the south.

12. Under the 10th FYP, the construction of the Southern East–West Highway is a major road infrastructure development priority, in addition to road construction connecting to hydropower projects. The country's southern regions hold the greatest promise for industrial growth, as evidenced by industrial developments in selected areas that already benefit from connectivity. Additionally, the Southern East–West Highway will also provide an internal transit route for Bhutanese passengers and goods, i.e., an alternative to the existing east–west national highway running through the northern part of the country. The Southern East–West Highway will facilitate industrial development in the southern economic hubs and special economic zones, and integrate them more effectively with their primary markets in India. Being a landlocked country, road access plays a vital part in the trade and commerce of Bhutan. India is the largest trading partner accounting for 90% of the country's imports and 70% of its exports. Bhutan's trade and economic communications with other South Asian countries depends on route through India. Currently, there is only one road corridor that connects Bhutan with India, located in western Bhutan. To increase trade flows, reduce transaction costs, and provide greater regional integration of the national road network and better trade facilities, the Southern East–West Highway will connect to border access points, thus improving regional road connections between Bhutan and India, and through India to Bangladesh and Nepal. The 10th FYP also gives priority to continued maintenance and management of road assets, quality assurance and standardization, and strengthening of the road construction industry.

a. Department of Roads Capacity Building

13. Until the early 1990s, there was only a very limited role for Government staff, local engineers, and contractors in road planning, construction, and management until the early 1990s. Since the 8th FYP (1997–2002), the Government and domestic private sector contractors have gained experience in road sector development and management, and the total DoR budget under the 10th FYP is Nu13.7 billion. To manage the large investment in roads, the DoR has initiated capacity strengthening and the streamlining of its business procedures. One of the major initiatives includes corporatization of the mechanical division with the establishment of the Construction Development Corporation (CDC) in July 2007. Utilization of equipment and work efficiency of the CDC has been increased.

14. The DoR will continue to further strengthen its capacity in both the policy and planning and engineering and technical aspects. The Japan International Cooperation Agency (JICA) has provided engineers on a long-term basis to the DoR to strengthen its engineering capacity. SNV Bhutan has provided experts to provide training for design and construction with environmental considerations. Under the proposed attached TA, assistance will be provided in asset management and road technologies of survey, design, and construction, and especially on environmentally friendly road construction (EFRC) methods.

b. Road Maintenance Financing

15. During the extended 9th FYP (2002–2008), the expenditure on resurfacing was Nu1,215 million for 1,285 km and for routine maintenance was Nu623 million for 2,307 km. The average cost per km of Nu945,000 for resurfacing and Nu45,000 for routine maintenance is considered appropriate. The average annual length scheduled for resurfacing was 214 km, which is considered to be about a 7-year resurfacing period.

16. Under the 10th FYP, the budget for resurfacing is Nu1,389 million for a planned 1,415 km, and for routine maintenance Nu784 million. The budget per km is considered adequate and the average annual length for resurfacing is about 280 km, which is about a 30% increase from the 9th FYP. All roads are now in a periodic maintenance cycle. The average cost per km both for resurfacing and routine maintenance has been increased to ensure better quality through increased mechanization.

17. The efficiency of the use of the maintenance budget has also improved. The productivity of the large national workforce for routine maintenance has been improved during the 9th FYP from 1 km per person to 1.5 km per person through scheduled retirements, a freeze on new recruitment, and increasing mechanization. A recent DoR initiative includes the introduction of performance-based contracts in routine maintenance for a batch of road sections to a group of road workers. The DoR continues to improve the road asset management systems for optimal allocation of the budget. The construction industry's experience with mechanized roadworks is increasing as the volume of works increases. These actions demonstrate the Government's increased commitment to maintenance and the increased efficiency of road maintenance works.

18. Taking into account the past budgetary provision and the trend, the Government is assessed as being able to adequately provide maintenance financing in a sustainable manner. Increased maintenance quality and productivity due to increased mechanization, quality assurance systems, the recent introduction of performance-based contracts for routine maintenance, and more adoption of EFRC techniques and appropriate road technologies, will also increase the efficiency of maintenance works and hence reduce maintenance costs. The Government has given assurances that it will provide adequate financing to maintain roads developed under Asian Development Bank (ADB) financing.

c. Construction Quality

19. Construction quality is a critical element for sustainable operation and management, and achieving it requires strengthening the capacity of both the Government and the private sector in quality assurance and control. The Government mandates the DoR to review design for all roads, including farm roads, which will enhance the quality of roads at all levels. Considerations would also require the use of appropriate design and technology for building roads in the context of Bhutan, including traffic, weather, and soil conditions. Simple, low-cost methods are often more appropriate and effective in terms of construction speed, quality, and environmental consideration, e.g., use of natural gravel, etc. The proposed Project will consider design and technology for simple, low-cost methods as appropriate.

20. The Standards and Quality Control Authority (SQCA) under the Ministry of Works and Human Settlement is responsible for improving quality assurance. A technical specification was renewed and published in February 2005, incorporating environmental considerations. All construction materials require certification by SQCA for use. The proposed attached TA project

will provide training in road technologies, which will help improve quality during the survey, design, and construction phases.

d. Construction Industry

21. With limited works in the past, the local construction industry has little capacity. However, local contractors have gained experience since the 8th FYP, and there has been further promotion of private sector participation under the 9th FYP. The amount of contracting out to the private sector has increased from Nu70 million under the 7th FYP (1992–1997) to Nu1,027 million under the 8th FYP (1997–2002) and Nu3,806 million under the 9th FYP. The contract awards under ADB's Road Improvement Project¹ (Nu500 million) and Road Network Project² (Nu1,232 million) greatly contributed to this increase.

22. The Construction Development Board (CDB) has a computerized registration system for contractors and an interim mechanism for dispute resolution. The CDB will continue with these construction development services, research and technology development, and awareness of best practices. Training provided under the attached TA project could be open to private contractors.

23. Under the 10th FYP, the DoR will coordinate all roadwork contracts to be outsourced to the private sector. Regional and internationally accredited engineering and construction firms will also be encouraged to participate, in joint ventures with national construction firms where necessary, to improve the quality and quantity of project delivery. Under the Project, international competitive bidding will be adopted.

e. Vehicle Pollution Control

24. To minimize pollution, the Government made a pollution control certificate for all vehicles compulsory, and so all vehicles are required to have pollution checks. The RSTA encourages the establishment of private sector pollution check centers, and there are two such centers so far—in Thimphu and Phuentsholing. The Government has continued to establish permanent pollution check centers, but needs to establish more in major cities that are equipped with emission test machines.

f. Overloading

25. Overloading is an emerging problem in Bhutan as the size of vehicles increases. It is also expected that overloaded trucks will operate on the major national highways as the economy grows. An overloading control program is being set up with initial installation of weighbridges at major border points such as Gelephu, Jongkhar, Phuentsholing, Samdrup and Samtse. Mobile weighbridges are available and more weighbridges will be installed in industrial towns. An overloading penalty of Nu500 per ton is strictly enforced.

¹ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Bhutan for the Road Improvement Project*. Manila.

² ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Kingdom of Bhutan for the Road Network Project*. Manila.

g. Road Safety

26. Bhutan has a lower accident rate compared with other lower and middle-income countries. However, the extent of underreporting of accidents, especially in rural areas, is not known. Considering the high growth of the vehicle fleet, these positive statistics may not be sustained.

27. The Road Safety and Transport Regulation of 1999 provides regulations for registration and licensing, commercial passenger vehicles, traffic control, and enforcement mechanisms. Measures have been taken to educate all drivers on basic safety precautions and many driving refresher courses have been organized. Vehicle inspections have been conducted, including predeparture inspection for buses and inspection of all vehicles every year, except commercial vehicles for which inspection is conducted every half year. Awareness of the need to improve road safety is increasing. High-risk accident areas are identified and reported to the DoR for future improvement. Road safety audits are undertaken under the Project.

2. External Assistance and ADB Strategy

28. The development of the road network has depended upon external assistance (Appendix 3). The main development agencies and governments active in the road sector are ADB and the governments of Austria, India, Japan, the Netherlands, and Switzerland.

29. The World Bank has the ongoing Rural Access Project II, which has included considerable institutional support to the DoR. Some support is also provided for the farm road program through agricultural development projects from various sources such as the European Union, German Agency for Technical Cooperation, the Government of India, International Fund for Agricultural Development, JICA, and Swiss Development Cooperation.

30. ADB continues to have dialogue with major financing agencies in the sector. ADB assistance has focused on resurfacing the East–West Highway in the north and, since the First Road Network Project (RNP-I), on network expansion. JICA focuses on bridges and construction equipment and is now also considering support to roads; the World Bank focuses on rural roads. For TA in the sector, bilateral funding agencies provide capacity building for engineering aspects, while ADB focuses on planning and policy aspects, and on-the-job technical support.

31. ADB involvement in transport and communications has so far been exclusively in roads. Since 1983, within the sector ADB has provided four loans totaling about \$52 million, seven advisory TA projects totaling \$3.66 million, and six project preparatory technical assistance (PPTA) projects totaling \$2.28 million. ADB assistance in the sector focuses on improving and expanding the road network to provide better access to regional and domestic markets with support to capacity development. The assistance will continue to provide a number of benefits through the following strategic sector objectives as per the country strategy and program (2006–2010):³ (i) continue to enhance the main road network, (ii) ensure adequate maintenance of the existing road network is carried out, (iii) improve rural accessibility, (iv) support institutional strengthening, (v) promote private sector participation, (vi) improve road technology and productivity, and (vii) support subregional links. ADB's South Asia Regional Cooperation Strategy and Program⁴ for 2006–2008 supports activities in improving regional transport

³ ADB. 2005. *Country Strategy and Program 2006–2010: Bhutan*. Manila.

⁴ ADB. 2005. *Regional Cooperation Strategy and Program: South Asia (2006–2008)*. Manila.

connectivity by reducing transportation costs, increasing the region's competitiveness, and facilitating the movement of goods and people, thus promoting economic development.

3. Lessons

32. ADB-assisted road projects in Bhutan have experienced delays, which are mostly attributable to (i) government procedures, especially relating to environmental clearances; (ii) unfamiliarity with ADB procedures and practices; and (iii) lack of capacity of the private sector in road construction and engineering and related services. With the ongoing RNP-I, delay in implementation was caused mainly by a delay in recruitment of consultants and in the land acquisition process. The progress of construction is generally acceptable.

33. The main weaknesses in project execution relate to design finalization, procurement, and land acquisition. The DoR has increased the number of engineers, especially in survey and design areas, and there is a need for further increases in terms of the number of engineers and levels of skills and knowledge. For safeguard implementation, the DoR has strengthened its capacity to satisfy interministerial procedures, such as environmental clearance, and increased its familiarity with ADB procurement procedures. During the regional workshop, representatives from dzongkhags with project roads were invited for discussions to expedite land acquisition processes. For procurement, the DoR has been exposed to ADB procurement procedures through several ADB projects. Private sector contractors have also gained experience through more works of a larger size. The DoR has taken initiatives to improve the speed and quality of completion of construction works, including regular monitoring of project progress.

34. Under the Project, the DoR will outsource design works to international engineering consultants, who will provide procurement support including finalizing bidding documents. On safeguard aspects, while dzongkhags are competent authorities for land acquisition, the DoR has offered support such as surveys. The social and resettlement specialist, who will be part of the team of the design and supervision consultants, will also provide training to the DoR and dzongkhag officers to familiarize them with ADB policies and requirements, thus improving the Government's capacity in safeguard implementation. The attached TA project will enhance the DoR's capacity in the planning and engineering of roads using modern technologies.

III. THE PROPOSED PROJECT

A. Impact and Outcome

35. The Project will promote industrial development in the southern areas of the country, which is remote and has high poverty incidence but high agricultural and industrial development potential. The Project will integrate the southern areas more effectively with their primary markets, increasing regional trade, through increased passenger and freight transport within the country and with India. The Project will open up high-potential areas of Bhutan to the regional transport and distribution system, promoting mutual economic growth and poverty reduction to Bhutan and other South Asian countries through more economic opportunities with India and access to job opportunities and markets. It will also expand the road transport network in the southern region, providing a major internal transit route for Bhutanese passengers and goods, i.e., an alternative to the existing east–west national highway running through the northern part of the country.

B. Outputs

36. **Investment Component.** The Project will upgrade or construct five critical sections (about 180 km) of the southern east–west highway: (i) Manitar–Raidak (37 km, upgrading to a national highway), providing access to the border crossing at Lhamoizingkha; (ii) Raidak–Lhamoizingkha (25 km, constructing a national highway); (iii) Panbang–Nganglam (36 km, constructing a national highway), providing access to the border crossing at Nganglam; (iv) Tsebar–Mikuri–Durung Ri (62 km, constructing a feeder road); and (v) Samdrupcholing–Samrang (23 km, constructing a national highway), providing access to the border crossing at Samdrup Jongkhar. Consulting services will be provided to prepare detailed design and support implementation of the civil works. Road improvement and construction works under the Project include constructing roadways including longitudinal drainage structures, installing culverts and bridges, constructing new bridges and cross-drainage structures, and structures for resettlement and rehabilitation of project affected people (Appendix 4).

37. **Capacity Building Component.** The Project will also provide equipment necessary for the Government to enhance sector capacity such as quality control, survey and design, and control of overloading and vehicle emissions. Major equipment includes laboratory equipment, survey and design equipment and software, vehicle emission and fitness testing equipment, and weighbridges. TA will be attached to the grant to support DoR capacity building, including increased knowledge of and skills in road technologies for survey, design, and construction, especially on EFRC methods. Support to road asset management will be continued for systems update and enhancement. The consultants will identify the specifications and timing of equipment required during the TA implementation. Consulting services under detailed design and construction supervision will provide on-the-job technical inputs and training during implementation, especially on EFRC.

C. Special Features

38. **Environmental Considerations and Appropriate Technologies in Design and Construction.** The DoR has adopted EFRC techniques in its design standard and construction. The methodology adopted for environmental consideration will minimize damage to the natural environment by use of controlled blasting, limited use of bulldozers (excavator-tipper combinations are used instead), use of log and boulder barriers to control slipping of blasted or excavated materials, and incorporation of bioengineering techniques for slope protection. The latest road technical specifications for roads and bridges published in February 2005 adopt these methods. Also, simple, low-cost methods are appropriately adopted for improving construction speed, quality, and environmental consideration, e.g., the use of natural gravel, etc. The Project will adopt these methods for all road sections.

39. **Community Participation in Alignment Selection.** During project preparation, field studies were conducted by using household surveys, focus group discussions, village profile surveys, consultations with other stakeholders both on-site and at headquarters in Thimphu, and workshops at which findings were discussed and roads and preliminary alignments were determined. The proposed alignment was decided through public consultation with communities and consideration of the assessment of economics and technical, social, and environmental aspects. Any changes to the alignment will be minimal at the time of detailed engineering studies due to full consultation with communities.

D. Project Investment Plan

40. The project investment cost is estimated at \$54.32 million, including taxes and duties (Table 1). The detailed cost estimates and financing plan are in Appendix 5.

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Investment Component	48.02
2. Capacity Building Component	1.00
Subtotal (A)	49.02
B. Contingencies^c	5.30
C. Financing Charges During Implementation^d	0.00
Total (A+B+C)	54.32

^a Includes taxes and duties of \$3.8 million.

^b In mid-2009 prices.

^c Physical contingencies computed at 5% for civil works. Price contingencies computed at 0.5% on foreign exchange costs and 5% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d 100% Asian Development Fund Grant.

Source: Asian Development Bank estimates.

E. Financing Plan

41. It is proposed that ADB provides a grant of \$38.76 million equivalent from its Special Funds resources, inclusive of a \$10.00 million grant from the subregional pool of the ADF and an \$8.76 million grant from additional ADF liquidity. The Government will finance the remaining local cost of \$15.56 million equivalent, or 28.6% of the total cost, including taxes and duties, land acquisition, remuneration of counterpart staff, office accommodation, and other miscellaneous costs (Table 2).

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	38.76	71.4
Government	15.56	28.6
Total	54.32	100.0

Source: Asian Development Bank estimates.

42. The original country performance-based allocation of ADF is \$20 million. The subregional pool of ADF of \$10 million has been provided in the country partnership strategy midterm review report⁵ based on subregional implications of the Project. Development of southern areas of the country with high poverty incidence but with high agricultural and industrial development potential will increase trade with India. Provision of an alternative east-west road in the south will substantially increase traffic and hence business opportunities, especially traffic between northeastern states of India and Thimphu and north of Thimphu, under the Project. The additional ADF liquidity of \$8.76 million was provided to Bhutan under

⁵ ADB. 2009. *Country Partnership Strategy Midterm Review: Bhutan 2006–2010*. Manila.

the crisis response of ADF, all of which has been allocated for the Project by the Government. This will support the Government's continued economic development and poverty reduction efforts and prevent any adverse impact on the economy, especially the tourism industry, in the wake of the global financial and economic slowdown.

F. Implementation Arrangements

1. Project Management

43. The organization chart for project implementation is provided in Appendix 6. The DoR will be the executing agency. The project management office (PMO) will be established and headed by a full time project coordinator at the executive engineer level. The PMO will be responsible for (i) the overall coordination, management and monitoring of the Project, (ii) supervision of the detailed engineering design and (iii) procurement. The DoR may, as required, organize meetings of related agencies of the Government to facilitate swift resolution of any implementation-related issues requiring coordination amongst various departments.

44. In addition to the PMO, two site offices will be established to be responsible for monitoring day-to-day implementation of the Project and preparation of project progress reports, each to be headed by a project manager at the assistant engineer level.

45. Procurement and contract awards will be the responsibility of the PMO. Each regional office will be responsible for (i) monitoring the progress of day-to-day project implementation, and (ii) preparing project progress reports. The project coordinator will consolidate these reports and submit them to the DoR and ADB, and will be responsible for preparing withdrawal applications. The project coordinator and all project managers will meet on a quarterly basis or as required.

2. Implementation Period

46. The Project will be implemented over 5 years inclusive of preconstruction activities, and taking into account the time required for preparing detailed design, bidding documents, and procurement. Civil works are expected to commence around January 2011 and be completed in December 2014. The implementation schedule is included in Appendix 7.

3. Procurement

47. Procurement to be financed from the ADB grant will be carried out in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). The civil works contracts will be undertaken in 10 contract packages (Appendix 8). All these contracts are estimated at more than \$1 million and will be procured through international competitive bidding procedures with domestic margin of preference. ADB is currently updating the list of countries eligible for domestic preference, which will be issued shortly. If Bhutan is not on the updated list of eligible countries at the time of bidding, the domestic preference referred to elsewhere in this report will not be applicable to this Project. The civil works contracts have been packaged to encourage both international and national bidders to participate for development of the domestic construction industry. The indicative contract packages are in Appendix 8. Bidders will be postqualified by applying a single-stage, two-envelope bidding procedure. Award of contracts will require prior review and approval by ADB.

48. Equipment financed under the Project will be worth \$1 million under the capacity building component, and will be procured using international competitive bidding procedures if the estimated contract is more than \$500,000, using national competitive bidding (NCB) procedures if the estimated contract is between \$100,000 and \$500,000, and shopping if the estimated contract amount is less than \$100,000. Contract packaging for equipment will be based on required technical features and timing of procurement. The TA consultants engaged under the attached TA will identify the packages during TA implementation. The procurement plan is in Appendix 9.

49. The NCB annex summarizes necessary modifications to or clarification of Bhutan's procurement procedures to carry out NCB for ADB-financed projects. NCB will be used for contracts with an estimated value of less than \$1 million and in cases where it is deemed more expeditious than international competitive bidding.

4. Consulting Services

50. Two international consulting firms will be recruited for (i) detailed design and procurement assistance, and (ii) construction supervision of civil works under the Project. The DoR will select and engage the consultants in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time).

51. For preparing detailed design and bidding documents and helping the DoR with procurement, an international consulting firm, in association with a national firm and/or individual consultants, will be recruited. The consulting inputs of the consultants will be 34 international person-months and 32 national person-months. The terms of reference (TOR) have been prepared (Supplementary Appendix C). The DoR has proposed to select the project preparatory technical assistance (PPTA) consultant as the detailed design and procurement assistance consultant through single source selection, which is a justifiable request because the PPTA consultants (i) have a clear advantage due to the highly unique topographic and geotechnical conditions of project roads, thereby limiting competition; (ii) do not require preparatory work, thereby saving costs; (iii) have demonstrated qualifications and experience through strong performance during the PPTA; and (iv) did not prepare the TOR for the subsequent project package on design and procurement assistance, thereby confirming absence of conflict of interest (refer to Attachment 1 of Appendix 9). If selected, key personnel of the PPTA team, including the team leader, the deputy team leader, and the current national specialists on environment and resettlement/social issues, will be retained for design and procurement assistance.

52. For construction supervision, an international consulting firm in association with national consultants and/or individual consultants will be recruited. The TOR have been prepared (Supplementary Appendix D). An estimated 28 person-months of international and 604 person-months of national consulting inputs will be provided. The international consultants will also provide on-the-job training to counterpart staff and national consultants, especially on EFRC implementation. The consultant will be recruited using the quality- and cost-based selection method (with full technical proposal).

5. Advance Contracting and Retroactive Financing

53. ADB approved advance contracting of civil works and provided in-principle agreement for retroactive financing in July 2009. Up to 20% of the grant proceeds will be eligible for retroactive financing, provided that expenditures are incurred on works, equipment, and

consulting services for the Project in accordance with agreed procedures and during the 12 months before the signing of the grant agreement. The Government has been informed that approval of advance contracting and in-principle approval of retroactive financing does not in any way commit ADB to finance the Project.

6. Anticorruption Policy

54. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government and the DoR. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the grant regulations and the bidding documents for the Project. In particular, all contracts financed by ADB in connection with the Project will include provisions specifying the right of ADB to audit and examine the records and accounts of the DoR and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

55. The contracting regime is transparent, and open tendering is conducted in accordance with the Financial Manual (1988)⁶, which was developed with ADB assistance. This was enhanced through a series of modifications as the Procurement Rules and Regulations 2009⁷ along with standardization of bidding documents of works and goods, and request for proposal for recruiting consulting services. The Royal Audit Authority undertakes a periodic audit of accounts and statements as part of its mandate on performance audits of government ministries. The Public Finance Act was enacted in 2007 to regulate the financial management of the Government in order to promote the effective and efficient use of public resources, strengthen accountability, and provide statutory authority and control for sound and sustainable fiscal policy. In respect of anticorruption measures, the Royal Audit Authority undertakes a program of workshops to (i) increase awareness of public officials and the general public of issues surrounding corruption, and (ii) promote discussions on current policies and guidelines.

56. The Project is the second project of a similar nature. The financial management arrangements for the project will remain the same as they were for the RNP-I. The Government is familiar with managing external funds, as well as utilizing, accounting, and reporting for the same.

57. The DoR will disclose information on the progress of the project to the public by making timely updates on its website. The DoR has separated its mechanical division into a separate corporate entity (CDC), which will help increase competition among contractors, and hence increase quality and reduce cost. To enhance overall road sector management, part of the attached TA project will provide capacity strengthening of the DoR in asset management, which will improve governance of road administration and accountability. For the Project, ADB procurement procedures using international competitive bidding will enhance transparency and fair competition, and ADB disbursement procedures and FIDIC⁸-based contract management will mitigate corruption problems during implementation.

⁶ Royal Government of Bhutan. 1998. *Financial Manual 1988*. Thimphu.

⁷ Royal Government of Bhutan. 2009. *Procurement Rules and Regulations 2009*. Thimphu.

⁸ Federation Internationale Des Ingenieurs-Conseils

7. Disbursement Arrangements

58. Grant disbursements will be in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). Direct payment, reimbursement, and imprest account procedures will be used for civil works, consulting services, and equipment. An imprest account for RNP-II will be established at the Royal Monetary Authority, and the initial and maximum amount to be deposited in the imprest account shall not exceed 10% of the grant amount or the equivalent of 6 months estimated expenditure to be financed from the imprest account, whichever is lower. The DoR will be responsible for monitoring this account, including monthly reconciliation of the accounts and preparation of the withdrawal applications for liquidation/replenishment of the account. To expedite disbursement during implementation, statement of expenditure (SOE) will be used to reimburse, liquidate, or replenish the imprest account for any individual payments not exceeding the equivalent of \$50,000, which may be reviewed and increased to \$100,000 based on experience of the new project team and its capacity to manage SOE. The project coordinator will ensure timely processing of payment requests from the contractors and will ensure that the PMO processes and forwards each payment request within 5 days of receipt of such requests to the Ministry of Finance for release of funds.

8. Accounting, Auditing, and Reporting

59. The DOR will maintain separate records and accounts adequate to identify the goods and services financed from the grant proceeds, the expenditure incurred, and the use of local funds under the Project. The accounts will be set up in accordance with sound accounting principles. These project accounts and related financial statements will be audited annually in accordance with sound auditing standards by auditors acceptable to ADB. The annual audit report will include the audit of the SOE procedures, and will specifically include a separate audit opinion on the use of grant proceeds and compliance with SOE procedures. The imprest account and SOE will be audited as part of the regular annual audit. The auditor's opinion of the examination of the imprest account and SOE will be separate in the auditor's report.

60. The audited reports and financial statements will be submitted to ADB not later than 9 months after the end of each fiscal year, taking into account the geographical and logistical difficulties in completing the auditing within 6 months. The request from the Government for a 9-month period for completing and submitting reports of audits carried out on the project activities can be considered justified considering that Project roads are scattered from the west to the east with difficult access, and contracts will be managed by the PMO and two site offices which are also scattered to facilitate close management of project roads. This will mean that the PMO will require more time for checking submissions by site offices. Under the ongoing project (RNP-I), the time allowed for submission of audited project accounts to ADB is 9 months following the end of the fiscal year based on weak capacity of the country's auditing systems. Of the two actual submissions so far, one was delayed by 2.6 months beyond the 9 months and the other was submitted 1.5 months in advance, which is still 7.5 months from the end of the fiscal year.

61. The DoR will prepare and provide ADB with Project quarterly progress reports on progress made during the period of review, changes if any to the implementation schedule, problems or difficulties encountered and remedial actions taken, anticipated problems and the proposed remedial measures, and work to be undertaken in the following period. The DoR will submit the quarterly progress reports to ADB within 45 days from the close of each quarter. These reports will also include a summary financial account for each subproject, expenditure to

date, report on performance monitoring, and the results of monitoring of the social and environmental impacts.

62. The DoR will prepare and provide ADB with a road completion report within 3 months of physical completion of each individual road, and a Project completion report within 3 months of completion of transactions under the Project. These reports will cover a detailed evaluation of each road project and the overall project covering the design, costs, contractors' and consultants' performance, social and economic impact, economic rate of return, and other details relating to the Project as may be requested by ADB.

9. Project Performance Monitoring and Evaluation

63. The DoR will, within 3 months of the grant signing, develop a systematic project performance monitoring system, in a form and substance acceptable to ADB, for use throughout the life of the Project.

64. The DoR will establish, within 3 months of the effective date of the grant, a baseline for performance indicators to be used for monitoring implementation of each road project. It will thereafter conduct evaluation surveys annually under each road project, in accordance with the project performance monitoring system, to evaluate the scope, implementation arrangements, progress, and achievements of objectives of the Project.

10. Project Review

65. ADB and DoR will meet regularly as required to discuss the progress of the Project and any changes to implementation arrangements or remedial measures required to be undertaken towards achieving the objectives of the subprojects and the Project. A midterm review of the Project will be undertaken by ADB and DoR in 2012. The midterm review will focus on issues related to implementation arrangements, and agree on changes, if needed, to achieve the objective of the Project.

IV. TECHNICAL ASSISTANCE

66. The TA of \$400,000 for Capacity Building of the Department of Roads will cover part of the Government's initiatives to strengthen DoR capacity in road technologies and road asset management to ensure the quality of road construction. The focus of the TA will be to equip DoR officials with knowledge of and skills in the road technologies of survey, design, and construction, especially with environmental considerations. Support to road asset management will be continued with focus on guiding DoR officials in the optimal use of the road asset management systems and application of computerized systems in applicable roads.

67. The consultants will undertake the services in close consultation with the director general of the DoR. Other agencies such as SQCA, CDC, CDB, and Construction Association of Bhutan will also participate in training and workshops. The consultants will also conduct training and workshops in the field and nationally as required.

68. The TA will be financed on a grant basis from ADB's TA funding program (Technical Assistance Special Fund-IV), and be carried out by an international consulting firm, to be recruited in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). The TA will be implemented for 6 months from December 2009 to May 2010.

International inputs of about 13 person-months are required. Terms of reference for the TA are in Appendix 10.

V. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

A. Technical Aspects

69. Various measures suitable to Bhutanese conditions are incorporated in the design, especially environmental considerations in design and construction, e.g., bioengineering in slope protection, controlled blasting, and appropriate technologies. Overall, the Project will develop quality roads (thereby substantially improving transport efficiency), speed up traffic, improve travel conditions, and reduce journey time and vehicle operating costs (VOCs).

B. Institutional and Operational Improvements

70. Improving management of the Bhutan road network through the capacity building component and the TA, and the expansion of the road network under the Project, will enhance overall road conditions and usability, thus increasing the travel speeds and reducing travel time, accidents, overloading, and hence subregional traffic. The enhancement of the DoR's capacity in construction quality and road asset management will improve sustainability of roads and efficiency of road maintenance, leading to better governance in road administration and accountability creating an environment encouraging efficiency within the DoR and the construction industry. This will ensure that road asset development and management is more efficient, and construction and maintenance is of higher quality, resulting in decreased recurrent costs over the medium and long term. This will add to the overall level of social and economic development in Bhutan.

C. Economic Assessment

71. The economic assessment was conducted in accordance with ADB's *Guidelines for the Economic Analysis of Projects*.⁹ The highway design and maintenance model was used to calculate VOCs and time costs with modification for conditions in Bhutan. The principal benefits are VOCs savings and travel time savings. Additional benefits to the population in project-affected areas have been added: (i) savings in VOCs and time due to improved passenger and freight transport, (ii) benefits of traffic generated by increased consumption and production due to better access, (ii) reduced loss of perishable goods are also added as part of the exogenous benefits of the model, and (iv) VOC savings for the traffic diverted from other routes due to shortened project roads.

72. The economic internal rate of return (EIRR) for the roads evaluated varied between 16% and 24%. The Project as a whole and by the individual road is robust. This is mainly due to the least-cost approach, such as reducing the formation width and use of gravel for those roads having limited traffic.

73. The sensitivity of the EIRR for the project roads was analyzed with respect to changes in the benefit and cost streams. The following sensitivity test cases were examined: (i) construction costs increase by 20%, (ii) benefits decrease by 20%, (iii) a combination of the first two cases, (iv) a construction delay of 1 year, and (v) a 50% reduction to the highest benefit

⁹ ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

category. The results show that the quantified economic benefits are robust to various sensitivity tests. Only one road has an EIRR slightly below 12% in the worst-case scenario. The roads serve one of the most undeveloped areas of the country, and their improvement will have a positive impact on the development of these areas. Considering their positive development impact and the fact that even in the worst-case scenario, they have an EIRR of more than 10%, the roads are recommended for implementation under the Project along with all other roads included in the analysis. Details of the economic assessment are in Supplementary Appendix E.

D. Financial Sustainability

74. Incremental recurrent costs associated with the project are estimated to be 14% of the current DoR maintenance budget and 2% of the overall DoR budget on an annual basis. The maintenance will be required after project completion in 2014 and the appropriate budget increase is expected, considering the trend in past years. It is reasonable to expect that funds will be available to meet these costs.

E. Social Impacts

75. **Livelihood and Poverty Reduction.** Remoteness and isolation are the major causes of poverty in Bhutan. The construction of national highways and feeder roads covering 183.0 km (Manitar–Raidak, 37.0 km; Raidak–Lhamoizhingkha, 25.0 km; Panbang–Amshingwoong, 36.0 km; Samdrupcholing–Samrang, 23.0 km; and Tsebar–Mikuri–Shingchungri, 62.0 km) will have direct benefits for the local population (poor and vulnerable groups and households headed by women). The Project is expected to improve the quality of life and bring new economic opportunities to the remote areas of the country. It is also expected to increase economic activity (particularly in small retail) at the roadsides and increased accessibility due to construction of access roads connected to the main roads.

76. The socioeconomic impacts of the Project will be positive in terms of access to health care facilities and education, improved communication facilities, easy transportation of cash crops, and vibrant growth of economic activities in rural villages. Rural electrification is also expected to improve once road connectivity is established. This will permit students to study for longer hours in the evening, and contribute to a cleaner living environment through the use of electricity and gas for cooking, thus saving the forests from further degradation.

77. The income-generation activities of the population of the immediate and wider project influence areas are expected to increase through sales of local produce at the road sites almost on a daily basis. As a result, the Project will significantly reduce the poverty level and improve the quality of life in the five beneficiary *dzongkhags* (districts)—Chhukha, Dagana, Pemagatshel, Samdrupjongkhar and Zhemgang—through connectivity of these remote rural areas. A summary poverty reduction and social strategy is in Appendix 11.

78. **Gender.** Gender participation was ensured during the course of the social study by undertaking a process of gender analysis to assess the impact of the Project. Sixteen focus group discussions were undertaken with women belonging to different socioeconomic groups such as high income, poor people, and women belonging to different ethnicities. These discussions revealed that the majority of the women felt that the roads will benefit them as they will be able to transport their yield to market and this will help increase their income. The study revealed no significant discrimination against women in Bhutan. The socioeconomic survey showed that, although some activities may be predominantly undertaken by either women or men, women and men traditionally have equal status for most socioeconomic activities. The

studies also revealed that rural women are becoming more visible in both household and other activities, and women are frequently taking on additional work to ensure a comfortable lifestyle for their families. Along with men in the project areas, women will benefit from (i) easier access to external markets, (ii) increased local retailing opportunities, and (iii) easier access to health care centers and education facilities. Women may also benefit more than men from the increased access to schools. Traditionally, enrolment rates in schools have been lower for girls than for boys.

79. **Involuntary Resettlement and Indigenous People.** To assess the Project resettlement impacts, a census survey based on preliminary road designs was undertaken from February to April 2009. For the five roads proposed for construction (national and feeder), 125.89 acres of private land (107.59 acres of dry land and 18.3 acres of wet land) are going to be affected. All the land to be acquired is privately owned. There are 279 affected households in total for all the roads. Eighty six affected structures are mainly permanent houses, temporary sheds, cowsheds, toilets, water tanks, and water taps. There are also mud irrigation channels that are community-owned and will require restoration.

80. Five separate short resettlement plans have been prepared to mitigate and address all these and associated losses. These resettlement plans were developed based on ADB's *Involuntary Resettlement Policy* (1995), and Government Land Act 1979 (amended in 2007). Complete details of compensation rates for the loss of land and structures, shifting assistance, and other income restoration assistance are provided in the entitlement matrix of the resettlement plans. Additional support provisions for affected people belonging to vulnerable groups are included in the resettlement plans. No impact on indigenous people is envisaged. The total cost for resettlement is estimated at \$1.23 million (Nu63,965,384). A summary of the resettlement plans is in Supplementary Appendix A.

81. **AIDS and Human Trafficking.** The Government has the 15-year National Sexually Transmitted Disease/AIDS Control Program. This is a multisector initiative involving all sections of society in Bhutan since 1988, assisted by bilateral development agencies, United Nations agencies, and a World Bank grant.¹⁰ The Government has been successfully carrying out awareness campaigns and free health care to minimize the spread of HIV/AIDS in various parts of the country. The social assessments undertaken have not revealed any significant risks of HIV/AIDS and human trafficking. However, the DoR will ensure that all civil works contractors disseminate information at work sites on the risks of sexually transmitted diseases and AIDS for those employed during construction. Contracts for all subprojects will include specific clauses on these undertakings, and compliance will be strictly monitored by the DoR, with the support of supervision consultants during project implementation.

F. Environmental Impacts

82. The Project has been classified as category A under ADB's *Environment Policy* (2002) as some of the road segments fall inside environmentally sensitive areas. Of the five road segments, the Panbang–Nganglam road falls inside the buffer zone of the Royal Manas National Park for most of its 36 km length, and approximately 7 km of the Samdrupcholing–Samrang road falls inside the Khaling Wildlife Sanctuary. In addition to these two, road segments along the Raidak–Lhamoizhingkha road fall inside habitat of important wildlife

¹⁰ World Bank. 2004. *Project Appraisal Document on a Proposed Grant in the Amount of SDR 4.0 million (US\$5.77 million equivalent) to the Kingdom of Bhutan for an HIV/AIDS and STI Prevention and Control Project*. Washington D.C.

species—elephant (*Elephas maximus*) and gaur (*Bos gaurus*). Both these species are listed as endangered and vulnerable under the IUCN¹¹ list and under Schedule I (totally protected species) of the Forest and Nature Conservation Act of Bhutan 1995. In addition, the Forest and Nature Conservation Act requires the preparation of a detailed environmental impact assessment (EIA) for projects that fall inside or in the buffer zone of protected areas. An EIA has been prepared for this project and the summary EIA (Supplementary Appendix B) was circulated to the Board.

83. Anticipated environmental impacts under the Project include impacts on (i) the physical environment such as air, soil, and water; (ii) the biological environment, such as vegetation and wildlife; and (iii) the socioeconomic environment, such as land acquisition and resettlement, labor conditions, and damage to local infrastructure. Most of the impacts are short term, reversible, and confined to the construction stage of the Project. Most of the impacts can be minimized and addressed through mitigation measures that have been included in the engineering design and the environmental management plan (EMP), which follow the principles of environmentally friendly road construction advocated by the Department of Roads. Hence, all necessary mitigation costs have already been included in the engineering works.

84. Removal of approximately 100 hectares (ha) of vegetation including 21,000 trees with a diameter breast height (dbh) that is greater than 0.9 meter are potential permanent and irreversible impacts. However, necessary measures will be implemented to revegetate the newly cut slopes and areas and a compensatory tree plantation program along with a lump-sum budget amount have been included in the EMP to recover the lost trees. Disturbance to wildlife habitat and obstruction of the wildlife movement paths, particularly of elephant and gaur, from the Indian plains in the south into the foothills of Bhutan in the north are the most significant impacts anticipated from the Project. Discussions have been carried out with the Nature Conservation Division of the Department of Forests, and the department has agreed to provide technical support for ensuring the development of road design and structures that will allow the continuation of the wildlife movement.

85. Both the EMP and engineering costs will be further updated after the detailed design studies have been carried out. An environment specialist will be engaged to ensure that all proposed measures are taken to minimize or mitigate negative impacts during the preparation of the detailed design. Significant changes in the EIA and EMP due to significant changes in the Project will warrant resubmission of the EIA report to government agencies of Bhutan and ADB for approval.

G. Project Risks

86. The risk of delayed implementation will be mitigated through (i) the DoR's advance actions and ADB's prior review of procurement, (ii) more hands-on advice during procurement processes, and (iii) more awareness of ADB safeguard requirements by the DoR and dzongkhag officials. ADB prior review will facilitate the approval process of bid evaluation. Hands-on support will be provided by the consultant under the Project. Training in safeguard requirements will be provided to the DoR and dzongkhag officials by environment and resettlement specialists under the design and construction supervision consultants to mitigate delays due to procedural clearance. The DoR will provide required support to dzongkhag offices, such as survey teams to facilitate land acquisition.

¹¹ International Union for Conservation of Nature

87. The country assistance program evaluation for Bhutan¹² indicated a risk of ad hoc design changes, which could result in realignment, leading to implementation delay. This risk has been minimized with full consultation with local communities and dzongkhag officials. Technical advice will be provided by the consultant under the attached TA and design and supervision consultants on appropriate technologies with environment considerations, which will ensure timely implementation of high-quality projects.

88. The risk of inadequate maintenance financing is mitigated through TA for continued support to asset management planning. Sufficient budget was allocated to the targeted length under the 9th FYP and the Government has provided for increased cost per km and increased target length under the 10th FYP.

89. As the country program evaluation and project performance audit report suggest, the TA is designed to reflect local conditions, develop simpler practical systems, and make consultants input more DoR-oriented, by providing DoR staff with specific tasks to be completed with minimal inputs given by international consultants for overall guidance.

90. Fiduciary risks are addressed by adopting international best practices in procurement with ADB prior review. This is a repeat project. The Ministry of Finance and the DoR have been exposed to ADB requirements and are fully aware of procedures. A discrepancy was recently identified in the computation method under the ongoing RNP-I. The issue has been discussed and resolved, and hence no more issues are envisaged.

VI. ASSURANCES AND CONDITIONS

A. Specific Assurances

91. In addition to the standard assurances, the Government and the DoR have given the following assurances, which will be incorporated in the legal documents:

92. **Road Maintenance Financing.** The Government will provide sufficient and timely budget for routine and periodic maintenance of the entire road network every year throughout project implementation.

93. **Counterpart Funds.** The Government will ensure the timely and adequate provision of all counterpart funds for the Project.

94. **Road Safety.** The Government will ensure that road safety measures are implemented, taking into account findings and recommendations of the PPTA and design and supervision consultants.

95. **Overloading.** The Government will ensure that all prevailing regulations on overloading control, including penalties, will be effectively implemented, including by further installing overweigh bridges.

96. **Health.** The Government and the DoR will ensure that contractors provide adequately for health and safety. Bidding documents will include measures on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking.

¹² ADB. 2005. *Country Assistance Program Evaluation for Bhutan*. Manila.

97. **Labor.** The Government and the DoR will ensure that civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites. People directly affected by the Project will be given priority to be employed by the Project. Contractors will not differentiate wages between men and women for work of equal value. A specific clause ensuring this will be included in bidding documents. The DoR will cooperate with the Department of Labor to monitor the implementation of this clause.

98. **Environmental Consideration.** The Government will implement all mitigation measures included in the EIA reports in accordance with the Royal Bhutan Environmental Policy as well as ADB's *Environment Policy*. The DoR will consult on a continuing basis with the park managers of the nearby national parks on the locations for construction campsites, hot mix and crushing plants, and disposal and handling of spoiled materials. The DoR will incorporate the EIA reports including the EMP in bidding documents and civil works contracts, and are updated, if necessary, in the course of Project implementation with prior approval of ADB ensure that contractors will implement the required mitigation measures and EMP as described in these reports. The DoR shall ensure that all conditions attached to these clearances will be implemented and monitored. The DoR will promptly mitigate and minimize any adverse impact on the environment that may arise from the Project implementation in accordance with the EMP. The DoR will undertake an environmental monitoring plan and submit semiannual reports to ADB and agencies on the implementation of the EMP as part of the progress report on Project implementation. The Government will report to ADB any change in alignment or to project components since the environmental assessment report was approved to allow a consideration on whether additional environmental assessment study is required.

99. **Land Acquisition and Resettlement.** The Government will (i) implement the Project in accordance with the resettlement plans prepared, ADB's *Involuntary Resettlement Policy* (1995), *Policy on Indigenous Peoples* (2006) and applicable national laws and regulations; (ii) in case of any design changes in project roads, ensure that the resettlement plans are updated on the basis of the final alignment and submitted to ADB for review and approval prior to awarding of civil works contracts; and (iii) provide semiannual progress reports on the implementation of the resettlement plans.

B. Conditions for Award of Contracts

100. The Government will not award civil works contract unless the following requirements have been met:

- (i) During the detailed design phase of the Project, the DoR will update the resettlement plans and the EMP as required. If the scope of the Project is substantially changed, the resettlement plans will be revised accordingly and submitted to ADB for approval before award of any civil works contract. Any changes to the EMP will be reviewed, recorded, and submitted to the National Environment Commission as well as to ADB for review and concurrence as required prior to awarding of civil works contracts.
- (ii) The DoR will have obtained the environmental clearance from the National Environment Commission for the purposes of the contract.

C. Conditions for Commencement of Civil Works

101. The DoR will not commence civil works unless it has acquired, paid compensation for, and made available the land and rights in land free from any encumbrances, and cleared any obstruction from the related section required to be handed over to the contractor for commencement of construction in accordance with the work schedule under the related civil works contract.

VII. RECOMMENDATION

102. I am satisfied that the proposed grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and, acting in the absence of the President, under the provisions of Article 35.1 of the Articles of Agreement of ADB, I recommend that the Board approve the grant not exceeding \$38,760,000 to the Kingdom of Bhutan from ADB's Special Funds resources for the Road Network Project II, on terms and conditions that are substantially in accordance with those set forth in the draft Grant Agreement presented to the Board.

C. Lawrence Greenwood, Jr.
Vice-President

14 October 2009

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Industrial development promoted in the southern economic hubs and increased regional trade through increased passenger and freight transport on the country's road network and regional transport and distribution system</p>	<p>Traffic volume along the project corridor increased by 20% more than the country's average traffic growth rate</p> <p>Volume of cross-border traffic increased by 50% more than the country's average traffic growth rate</p> <p>Industrial activities (the number of industries) in project-influenced <i>dzongkhags</i> (districts) increased by 10% more than the country's average traffic growth rate</p> <p>Contribution of road transport sector to gross domestic product (11.3% in 2007) increased by 10%</p>	<p>Post-implementation measurement</p> <p>Government socioeconomic statistics, e.g., Selected Economic Indicators, Statistical Yearbook of Bhutan</p>	<p>Assumptions Various government development activities effectively coordinated with road sector investment</p> <p>The Government provides routine and periodic maintenance throughout the project life</p>
<p>Outcome Expanded road transport capacity in the southern region, facilitating efficient and safe transport in the southern region of the country and with India and through India to Bangladesh and Nepal</p>	<p>Average travel time along project roads reduced by at least 50% (from more than 3 hours)</p> <p>Fatality rate along the project corridor not exceeding the country's average fatality rate (5 per 10,000 vehicles)</p>	<p>Post-implementation measurement</p> <p>RSTA accident data</p>	<p>Assumptions Timely and quality project delivery</p> <p>Transport modes and services available for the project roads</p>
<p>Outputs 1. Critical sections connected along the southern east-west corridor</p> <p>2. Strengthened capacity of road engineering technologies and road asset management</p>	<p>180 km completed by 2014</p> <p>Project roads maintained with international roughness index below 5 (paved roads) and at an all-weather standard (gravel roads)</p>	<p>Progress reports</p> <p>ADB's review missions</p> <p>DoR road condition survey</p>	<p>Assumptions Civil works implemented on schedule</p> <p>Qualified civil works contractors and consultants participate</p> <p>Efficient and effective procurement and safeguard implementation</p> <p>Government commitment to institutional strengthening</p>

Activities with Milestones	Inputs
<ul style="list-style-type: none"> 1. Road construction <ul style="list-style-type: none"> 1.1 Engagement of design and supervision consultants by end of 2009 1.2 Procurement of civil works completed by September 2010 1.3 Construction of all civil works completed by end of 2014 2. Capacity building (technical assistance) <ul style="list-style-type: none"> 2.1 Consultant selection by June 2010 2.2 Training of DoR field office staff by end of 2010 2.3 Road maintenance planning by end of 2010 	For 1: ADB: \$38.76 million Government: \$15.56 million For 2: ADB: \$0.4 million Government: \$0.1 million in-kind contributions

ADB = Asian Development Bank; DoR = Department of Roads; RSTA = Road Safety and Transport Authority.

BHUTAN ROAD SECTOR

A. Introduction

1. Transport and communications contributed 11.3% to overall gross domestic product in 2007. Road transport is the only internal transport mode in Bhutan, other than a few ropeways. The country has no domestic flights, no railways, and no navigable rivers. However, many areas are not accessible by road and are served only by an extensive network of mule tracks which exists throughout the country. The census survey in 2005 indicates that 9.7% of the population lives more than 6 hours away from the nearest road and that the rural households in six districts comprise 73% of this percentage. Only one airport provides limited air access to the rest of the world. The Asian Development Bank (ADB) involvement in transport and communications so far has been only in the road sector.

2. The Government's 10th Five-Year Plan (FYP, 2008–2013) objectives for roads and bridges are (i) providing road access to all *gewog* (town) centers; (ii) reducing poverty incidence and improving the quality of life of the rural population through enhanced rural accessibility; (iii) enhancing national security and solidarity through an improved/expanded road network; (iv) enhancing road connectivity to facilitate accelerated hydropower development; (v) consolidating environmentally friendly construction practices to minimize impacts on the environment; (vi) enhancing reliability, economy, safety, ease, and comfort of road travel through reducing travel time, road user costs, transportation costs of goods and services, and traffic accidents; (vii) promoting and enhancing private sector participation in delivery of construction and maintenance of road and bridge infrastructure; and (viii) building professionalism and engineering capacity in the areas of planning, design, monitoring, quality control, and cost-effective construction of road and bridge infrastructure works. The overall budget of the Department of Roads (DoR) under the 10th FYP is Nu13,708 million for (i) road construction, including feeder roads (Nu6,438 million); (ii) road improvement, including realignment (Nu4,569 million); (iii) road resurfacing (Nu1,389 million); (iv) routine maintenance (Nu784 million); (v) monsoon restoration (Nu200 million); and (vi) bridges and other activities.

B. Road Network and Traffic

3. In a landlocked country such as Bhutan, socioeconomic development depends largely on an efficient and reliable road network. Since the construction of the 179 kilometer (km) Phuentsholing–Thimphu Highway in 1959, the national road network has expanded to about 4,947 km of motorable roads, including 1,632 km of national highways, 489 km of district roads, 813 km of feeder roads, 150 km of urban roads, 717 km of farm roads, and 560 km of forest roads. This gives a road density of 0.13 km per square km and 7.5 km per 1,000 inhabitants. The km per inhabitants figure is relatively high in comparison with countries of similar size and income level; this is due to Bhutan's low population density. Travel between east and west regions relies on the single east–west national highway running through the northern part of the country, or it requires going through in India, especially in southern areas of the country. Other than the traditional surface border crossings with India, only one airport provides limited air access to the rest of the world.

4. Almost all national highways (95%), more than 90% of the district and urban roads, and about 20% of feeder roads are paved. Narrow roads have been built along steep hillsides prone to landslides. Roads become difficult to use during the winter months and rainy season. Improvement, maintenance, and expansion of the existing road network is urgently required. Because of the mountainous terrain, the area of land suitable for agriculture is limited, and the

population of less than 700,000 is distributed in remote settlements. This situation makes construction and maintenance of roads extremely difficult and costly. The widespread use of manual resurfacing can only provide low-quality pavement.

5. The number of motor vehicle registrations increased from 29,914 in 2005 to 35,703 in 2007, which is an average annual increase of 9.2%. The highest increase was in light vehicles at 13%, and there was not much increase in two-wheelers. Out of 35,703 motor vehicles registered, over 60% were light vehicles and taxis, 20% were two-wheelers, and 13% were heavy vehicles.

6. Despite rapid traffic growth, the number of reported accidents has decreased from 1,039 accidents with 22 fatalities in 2005 to 858 accidents with 18 fatalities in 2007. This translates to 5 annual fatalities per 10,000 vehicles, which is low in comparison with other lower and middle-income countries where the range is 5–100 annual fatalities per 10,000 vehicles. However, the extent of underreporting of accidents, especially in rural areas, is not known. Considering the high rate of vehicle increase, these positive statistics may not be sustained.

C. Bhutan Road Asset Management

7. The DoR under the Ministry of Works and Human Settlement (MoWHS) has direct responsibility for 2,449 km of roads, comprising 1,125 km of national highways, 419 km of district roads, 805 km of feeder roads, and 100 km of urban roads. The road network under the DoR has increased by almost 16%, from 2,120 km in 2005. DANTAK, an organization under the Army Engineering Corp of the India Border Force, has constructed and maintained the country's main road network since 1959, and continues to maintain 12% of Bhutan's main road network under a grant from the Government of India. Farm roads, forest roads, and some feeder roads are managed by the Departments of Agriculture, Forestry and Education, and local roads and mule tracks are the responsibility of local government authorities. The DoR is also responsible for the management of the national workforce, which has been primarily employed for force-account road construction and maintenance works.

8. The DoR is responsible for the planning, construction, and management of roads. The director general is the technical and administrative head of the DoR, reporting to the secretary of the MoWHS. The headquarters is organized with four divisions which are responsible for construction and maintenance of roads: the Survey and Design Division, the Investigation and Development Division, the Roads Division, and the Bridge Division. The divisions are headed by chief engineers who are responsible for implementation of policy and overall supervision of DoR administration. In addition to the four divisions, project management units are set up for special projects such as those funded by ADB and the World Bank.

9. The DoR has eight field divisions, headed by executive engineers who are responsible for the maintenance of about 300 km of roads. A field division has at least three subdivisions, each headed by an engineer acting as deputy executive engineer. Deputy executive engineers manage and supervise works within their subdivisions, involving design and contract management, including quality control and testing. Each subdivision has two further sections or units, headed by a junior engineer who is the basic field functionary and is responsible for managing actual construction activity in the field and taking measurements. Some divisions have laboratories for the mandatory testing of material.

10. The existing DoR organization is fairly well in line with the requirement of road development and management. However, the capacity of the DoR in the core processes

requires strengthening and reorganization. The Construction Development Board (CDB) can arrange training for contractors and DoR personnel to improve their skills in construction management, but capacity and resources are limited.

D. Implementation Capacity

1. Procurement and Implementation

11. Work procurement is governed by the Procurement Rules and Regulation 2009 (PRR 2009) with the Standard Bidding Document for procurement of works. The rules are applicable to all government agencies. The procurement procedures are well defined and cover all aspects of procurement such as registration of bidders, organization of procurement, procurement methods, bidding process, and award of contract. The PRR 2009 also defines institutional arrangements for addressing grievances in the procurement process and establishing a procurement policy division. The Public Procurement Policy Division has already been established and is mandated to monitor implementation of rules and regulations, and develop and administer the grievances review mechanism and deal with all procurement-related functions such as improvements to procedures, research, training, and capacity development. PRR grants exemption to the application of rules for externally funded projects if required.

12. There is a need for more training for procurement professionals and contractors in procurement process, contracts, and contract implementation. In addition to the Public Procurement Policy Division, the CDB is organizing training courses for contractors. Under the proposed Project, a consultant will be engaged for procurement assistance.

13. The procurement of works for the ongoing ADB-funded Road Network Project (RNP-1) is undertaken by the project management office (PMO), which has successfully completed procurement for 12 projects so far. The time taken from the date of bid invitation to contract effectiveness ranged from 4 months to 7 months, except in cases where no technically qualified bid was obtained in the first instance which has added 2–3 months time for rebidding. The DoR is now very familiar with ADB requirements.

14. The main weaknesses in project execution are design finalization, procurement, and land acquisition. The DoR has increased the number of engineers, especially in the survey and design areas, and further capacity enhancement in terms of the number of engineers and skills and knowledge is required. For safeguard implementation, the DoR has strengthened its capacity to satisfy interministerial procedures, such as environmental clearance, and enhanced its familiarity with ADB procurement procedures. During the regional workshop, representatives from *dzongkhags* (districts) with project roads were invited for discussions to expedite land acquisition processes. For procurement, the DoR has been exposed to ADB procurement procedures after several ADB projects. Private sector contractors have also gained experience through a number of larger works. The DoR takes initiatives to ensure the timely completion of high-quality construction works, and these include the regular monitoring of project progress.

15. Under the Project, the DoR will outsource design works to international engineering consultants, who will provide procurement assistance support including finalizing bidding documents. On safeguard aspects, while *dzongkhags* are competent authorities for land acquisition, the DoR has offered support such as surveys. The social and resettlement specialist under the design and supervision consultant will also provide training to the DoR and *dzongkhag* officers to familiarize them with ADB policies and requirements, thus improving the

Government's capacity in safeguard implementation. The attached technical assistance will enhance DoR capacity in the planning and engineering of roads using modern technologies.

2. Financial Management

16. The MoWHS Accounts Division looks after the entire ministry accounts, which includes the Department of Roads. It administers both the fiscal and project accounts. MoWHS financial management is guided by the Financial Rules and Regulations 2007 as provided in the Financial Manual 2001 of the Government. The MoWHS Accounts Division is staffed by experienced staff deputed from the Ministry of Finance. The accounting system is fully computerized (known as the Budget and Accounting System [BAS]), a computerized double-entry cash accounting system which is used across all government agencies. The accounting division staff are well trained in the BAS. The Fixed Asset Register (FAR) is maintained for all goods purchases and inventoried.¹ Monthly reports of receipt and appropriation are generated by the BAS and submitted to the Department of Public Accounts (DPA) through the parent ministry. The DPA consolidates the monthly reports and submits the annual report for all the agencies. While the Internal Audit Division carries out auditing of the ministry's accounts, the Royal Audit Authority is the designated agency of the Government for annual auditing of government and project accounts as per statutory requirement.

17. The ongoing ADB project has a full-time accounts officer, assisted by an accounting assistant, posted to the project implementation unit (PIU). The transactions are recorded through the BAS and monthly financial reports are generated from the BAS. No particular difficulty was reported by the PIU in project accounting and reporting for the Project. A separate project account is maintained for receiving funds from ADB and the Government. There has been difficulty and delay in obtaining required documentation in a timely manner from the contractors to process the payments and submit documentation for replenishment of funds from ADB. This process is being improved and the PIU expects that the processing of both payments and replenishments can be done in a timely manner.

18. ADB funds for the Government are received through the Royal Monetary Authority, which in turn informs the DPA. The DPA then releases the funds, as per the budget provisions (which includes the Government's contribution) for all planned programs and projects, to the executing agency. For projects, the PMO has a joint signatory imprest account with the Bank of Bhutan for all appropriations, with the project manager and the accountant as the signatories.

19. Overall, the financial management and accounting system is well established. The Project is a repeated operation and the financial management arrangements for the Project will remain the same as they were for the RNP-I. The Government is familiar with managing external funds, as well as utilizing, accounting, and reporting for the same. However, there were some errors in claims submitted for the RNP-I. This was partly attributed to weak capacity of the PMO and its misunderstanding of claim processing procedures. Recently, ADB has conducted training on ADB loan disbursement procedures, which was attended by project accountants and project coordinators of ongoing ADB projects in Bhutan. To ensure continuity and the transfer of institutional knowledge from RNP-I for the Project, DoR officers experienced in RNP-I will provide support to the new PMO on the requirement basis.

¹ The goods/consumables are not reported in the FAR, although a stock register is required to be maintained for showing receipt and issue to maintain accountability.

E. Road Transport Regulation and Industry

20. The Road Safety and Transport Authority (RSTA) of the Ministry of Information and Communications is responsible for all motor vehicle-related activities including registration and licensing and roadworthiness and emission tests. The RSTA regulates the transport industry and sets tariffs. The tariffs are binding for passenger traffic but are considered indicative for freight as it only applies to hiring by the Government. Large transport contracts are generally contracted out by industries in open tender to both transport companies and truck owners. The freight transport market is fully competitive. The size of the truck fleet has risen significantly in recent years and increased competition is reported.

21. Privatization of bus operations was initiated in 1985 and all routes were privatized by October 1999. As of June 2009, the RSTA had 124 bus routes covering 18 dzongkhags (except Gasa and Pemagatshel) operated by 35 private operators. There are 180 buses in operation (excluding city buses), which is above the RSTA public transport target in the 10th FYP (170 buses). Private operators may propose new routes for operation for RSTA permission, which is provided based on assessment of potential demand. New routes proposed by RSTA will be contracted out based on open competition, with passenger fares regulated by the RSTA on the basis of direct cost plus operational overhead. Public demand for transport services has been increasing, and the frequency of service has increased and operation hours expanded. There continues to be strong demand for more routes, and this will grow with the construction of many new roads. To encourage private operators to purchase new buses for better services, the RSTA has waived import duty for buses as a subsidy measure, and operation contracts have been extended to 10 years.

22. The Road Safety and Transport Act of 1999 defines the roles of RSTA and the traffic police in implementing the road traffic safety rules. The act reflects modern practice and the traffic safety rules are in line with international standards.

F. Road Expenditure and Revenue

23. Budgetary expenditure of the DoR under the 9th Five-Year Plan (FYP, 2002–2007, extended to 2008) was Nu7,418 million (\$161 million) against an original budget of Nu6,566 million (\$143 million). The substantial increase in expenditure is due to extension of the 9th FYP to 2008. The average annual expenditure is Nu1,236 million against the original average annual expenditure of Nu1,313 million, which is 6% underspending. This demonstrates remarkable improvement in DoR capacity and commitment. Under the 10th FYP (2008–2013), the overall budget is Nu13,708 million, which is 1.8 times (2.2 times on the annual basis) the amount in the 9th FYP due to the new Government's priority for road rehabilitation and development.

24. Specific charges for road use are taxes on motor vehicles levied by the RSTA, including annual registration, renewal, and ownership transfer fees, were Nu97 million in 2008, increasing from Nu60 million in 2005. In addition, road users pay sales tax on fuel and custom duties and sales tax on vehicles, which was Nu121 million in 2005 and Nu152 million in 2008. Revenue relating to road use was Nu249 million in 2008, increasing from Nu181 million in 2005; this is absorbed into general government revenue. The average annual increase is very high at 15.6%.

G. Main Sector Issues and Government Initiatives

25. Despite the expansion of the road network, it requires improvement in terms of coverage and condition. Demands of road transport are increasing. One of the major concerns with

Bhutan's trunk road network is that the country is dependent on the single east–west national highway running through the northern part of the country. The absence of a similar east–west highway running through the south constrains travel in the southern part.

26. Under the 10th FYP, the construction of the Southern East–West Highway is a major road infrastructure development priority, in addition to road construction connecting to hydropower projects. The Southern East–West Highway will facilitate industrial development in the southern economic hubs and special economic zones and integrate them more effectively with their primary markets in India. Additionally, the Southern East–West Highway will provide an internal transit route for Bhutanese passengers and goods, i.e., an alternative to the existing east–west national highway running through the northern part of the country. The 10th FYP also put priority on continued maintenance and management of road assets, quality assurance and standardization, and strengthening of the road construction industry.

1. Department of Roads Capacity Building

27. There was only a very limited role for Government staff, local engineers, and contractors in road planning, construction, and management until the early 1990s. Since the 8th FYP (1997–2002), the Government and domestic private sector contractors have gained experience in road sector development and management, and the total DoR budget under the 10th FYP is Nu13.7 billion. To manage the massive investment in roads, the DoR has initiated capacity strengthening and the streamlining of its business procedures. One of the major initiatives includes corporatization of the mechanical division with the establishment of the Construction Development Corporation (CDC) in July 2007. Utilization of equipment and work efficiency of the CDC has been increased.

28. The DoR will continue to further strengthen its capacity in both the policy and planning and engineering and technical aspects. The Japan International Cooperation Agency (JICA) has provided engineers on a long-term basis to the DoR to strengthen its engineering capacity. SNV Bhutan has provided experts to provide training for design and construction with environmental considerations. Under the proposed attached TA, assistance will be provided in asset management and road technologies of survey, design, and construction, and especially on environmentally friendly road construction (EFRC) methods.

2. Road Maintenance Financing

29. During the extended 9th FYP (2002–2008), the expenditure on resurfacing was Nu1,215 million for 1,285 km and for routine maintenance was Nu623 million for 2,307 km. The average cost per km of Nu945,000 for resurfacing and Nu45,000 for routine maintenance is considered appropriate. The average annual length scheduled for resurfacing was 214 km, which is considered to be about a 7-year resurfacing period.

30. Under the 10th FYP, the budget for resurfacing is Nu1,389 million for a planned 1,415 km, and for routine maintenance Nu784 million. The budget per km is considered adequate and the average annual length for resurfacing is about 280 km, which is about a 30% increase from the 9th FYP. All roads are now in a periodic maintenance cycle. The average cost per km both for resurfacing and routine maintenance has been increased to ensure better quality through more mechanization.

31. Efficiency of the use of the maintenance budget has also improved. The productivity of the large national workforce for routine maintenance has been improved during the 9th FYP

from 1 km per person to 1.5 km per person through scheduled retirements, a freeze on new recruitment, and increasing mechanization. A recent DoR initiative includes the introduction of performance-based contracts in routine maintenance for a batch of road sections to a group of road workers. The DoR continues to improve the road asset management systems for optimal allocation of the budget. The construction industry's experience with mechanized roadworks is increasing as the volume of works increases. These actions demonstrate the Government's increased commitment to maintenance and the increased efficiency of road maintenance works.

32. Taking into account the past budgetary provision and the trend, the Government is assessed as being able to adequately provide maintenance financing in a sustainable manner. Increased maintenance quality and productivity due to increased mechanization, quality assurance systems, the recent introduction of performance-based contracts for routine maintenance, and more adoption of EFRC techniques and appropriate road technologies, will also increase the efficiency of maintenance works and hence reduce maintenance costs. The Government has given assurances that it will provide adequate financing to maintain roads developed under Asian Development Bank (ADB) financing.

3. Construction Quality

33. Construction quality is a critical element for sustainable operation and management, and achieving it requires strengthening the capacity of both the Government and the private sector in quality assurance and control. The Government mandates the DoR to review design for all roads, including farm roads, which will enhance the quality of roads at all levels. Considerations would also require the use of appropriate design and technology for building roads in the context of Bhutan, including traffic, weather, and soil conditions. Simple, low-cost methods are often more appropriate and effective in terms of construction speed, quality, and environmental consideration, e.g., use of natural gravel, etc. The proposed Project will consider design and technology for simple, low-cost methods as appropriate.

34. The Standards and Quality Control Authority (SQCA) under the Ministry of Works and Human Settlement is responsible for improving quality assurance. A technical specification was renewed and published in February 2005, incorporating environmental considerations. All construction materials require certification by SQCA for use. The proposed attached TA project will provide training in road technologies, which will help improve quality during the survey, design, and construction phases.

4. Construction Industry

35. With limited works in the past, the local construction industry has little capacity. However, local contractors have gained experience since the 8th FYP, and there has been further promotion of private sector participation under the 9th FYP. The amount of contracting out to the private sector has increased from Nu70 million under the 7th FYP (1992–1997) to Nu1,027 million under the 8th FYP (1997–2002) and Nu3,806 million under the 9th FYP. The contract awards under ADB's Road Improvement Project² (Nu500 million) and Road Network Project³ (Nu1,232 million) greatly contributed to this increase.

² ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Bhutan for the Road Improvement Project*. Manila.

³ ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Kingdom of Bhutan for the Road Network Project*. Manila.

36. The Construction Development Board (CDB) has a computerized registration system for contractors and an interim mechanism for dispute resolution. The CDB will continue with these construction development services, research and technology development, and awareness of best practices. Training provided under the attached TA project could be open to private contractors.

37. Under the 10th FYP, the DoR will coordinate all roadwork contracts to be outsourced to the private sector. Regional and internationally accredited engineering and construction firms will also be encouraged to participate, in joint ventures with national construction firms where necessary, to improve the quality and quantity of project delivery. Under the Project, international competitive bidding will be adopted.

5. Vehicle Pollution Control

38. To minimize pollution, the Government made a pollution control certificate for all vehicles compulsory, and so all vehicles are required to have pollution checks. The RSTA encourages the establishment of private sector pollution check centers, and there are two such centers so far—in Thimphu and Phuentsholing. The Government has continued to establish permanent pollution check centers, but needs to establish more centers in major cities, with emission test machines to be installed in each center.

6. Overloading

39. Overloading is an emerging problem in Bhutan as the size of vehicles increases. It is also expected that overloaded trucks will operate on the major national highways as the economy grows. An overloading control program is being set up with initial installation of weighbridges at major border points such as Gelephu, Jongkhar, Phuentsholing, Samdrup and Samtse. Mobile weighbridges are available and more weighbridges will be installed in industrial towns. An overloading penalty of Nu500 per ton is strictly enforced.

7. Road Safety

40. Bhutan has a lower accident rate compared with other lower and middle-income countries. However, the extent of underreporting of accidents, especially in rural areas, is not known. Considering the high growth of the vehicle fleet, these positive statistics may not be sustained.

41. The Road Safety and Transport Regulation of 1999 provides regulations for registration and licensing, commercial passenger vehicles, traffic control, and enforcement mechanisms. Measures have been taken to educate all drivers on basic safety precautions and many driving refresher courses have been organized. Vehicle inspections have been conducted, including predeparture inspection for buses and inspection of all vehicles every year, except commercial vehicles for which inspection is conducted every half year. Awareness of the need to improve road safety is increasing. High-risk accident areas are identified and reported to the DoR for future improvement. Road safety audits are undertaken under the Project.

EXTERNAL ASSISTANCE TO THE ROAD SECTOR

Table A3.1: Asian Development Bank Loan and Technical Assistance Projects

Project Name	Approval Date	Amount (\$)	Grant/Loan
Multiproject	1983	5,000,000	Loan
Roadworks Mechanization	1986	4,500,000	Loan
East–West Highway Maintenance	1993	5,200,000	Loan
Road Improvement	2000	12,800,000	Loan
Multiproject	22-Sep-83	145,000	Grant
Road Construction and Training	24-Jun-85	75,000	Grant
Institutional Strengthening of Public Works Department	28-Oct-86	150,000	Grant
Institutional Strengthening of the Department of Roads	6-Sep-91	530,000	Grant
Road Project	30-Mar-92	250,000	Grant
Development of Maintenance Management System	18-Nov-93	390,000	Grant
Construction Management	18-Nov-93	740,000	Grant
Road Transport Network Development	15-Dec-98	650,000	Grant
Capacity Building of the Construction Development Board	15-Jan-99	400,000	Grant
Road Planning and Management Strengthening	4-Aug-00	954,000	Grant
Road Network Expansion	10-Jul-03	500,000	Grant
Road Network Project	30-Sep-05	27,300,000	Loan
Capacity Building for Road Safety and Road Asset Management	30-Sep-05	300,000	Grant
Preparing Road Network Project II	10-Sep-08	650,000	Grant

Source: Asian Development Bank

Table A3.2. Assistance from Other Sources in Recent Years

Source	Project Name	Approval Date	Amount	Grant/Loan
WB	Japanese Grant for Rural Access Project	26-May-99	\$196,000	Grant
	Rural Access Project	19-Nov-99	\$11,600,000	Loan
	Second Rural Access Project	12-Mar-07	\$10,000,000	Grant
Austria	TA to Hesothangkha Mechanical Workshop	1-Jan-00	Nu7,600,812	Grant
India	Various road projects under 9 th FYP		2,830,100,000	Grant
	Various road projects under 10 FYP		4,483,780,000	Grant
Japan	Third Phase Road Construction and Maintenance Equipment	2004	Nu602,000,000	Grant
	Reconstruction of Highway Bridges	11-Jan-01	¥49,000,000	Grant
	Reconstruction of H/way Bridges (Construction)	8-May-01	¥1,762,000,000	Grant
	Second Phase Reconstruction of H/way Bridges	2004	Nu230,000,000	Grant
Netherlands	Rural Access TA Project	1-Apr-00	f1,995,000	Grant
	EFRC Support Project	2003	Nu33,000,000	Grant
Switzerland	Puna Tsang Chhu Bridge Phase II	3-Aug-99	SwF2,393,000	Grant
	Suspension Bridge Programme Phase IV Part II	14-Jan-99	SwF2,490,000	Grant
	Reconstruction of Seven Suspension Bridges	14-Aug-01	Nu9,759,000	Grant
	Suspension Bridge Programme, Phase V	10-Feb-03	SwF2,495,000	Grant
	EFRC Support Project	2003	Nu39,000,000	Grant

f = Dutch guilder, ¥ = Japanese yen, Nu = Bhutan ngultrum, Rs = India rupees, SwF = Swiss franc, EFRC = environment friendly road construction, R&D = research and development, TA = technical assistance. Source: Ministry of Finance.

PROJECT ROADS AND SUMMARY OF DESIGN STANDARDS

1. The intention of the Road Network Project II is to construct and rehabilitate about 121 kilometers (km) of national highway (23 km of which is of feeder roads standard) and about 62 km of feeder roads in Bhutan.

Table A4: Project Roads

Contract Packages	Length (km)
National Highway	
Manitar–Raidak	37
Raidak–Lhamoizingkha	25
Panbang–Amshingwoong (Ngangalam)	36
Samdrupcholing–Samrang ^a	23
Feeder Roads	
Tsebar–Mikuri–Durung Ri	62

km = kilometer.

^a Feeder road design standard.

Source: Department of Roads

2. The general guidelines given in the Road Survey and Design Manual published in June 2005 by the Department of Roads and the Road Design Manual Part-1 (Geometric Design of Rural Roads) have been adopted as the design standards for the study. Suitable modifications and additions have been incorporated to suit local conditions and study requirements. The project roads covered under this study are characterized by steep mountains and deep gorges. Factors such as weak geology, varying topography and climate conditions, and environmental requirements dictate the choice of road alignment. Short sections of the road however do pass through rolling to hilly terrain.

3. The general principle adopted was to follow the existing alignment as much as possible to limit the extent of land acquisition and earthworks and to maximize the use of the existing road formation. Where the existing alignment proved unsafe for suggested traffic speeds, minor horizontal realignments are proposed for some of the sections to improve safety and general drivability. The major geometric design elements constituting the cross-section are the carriageway, the shoulders, and the side drain. The carriageways include the traveled way and passing bays.

4. A detailed description of the design approach is as follows:

- (i) **Cross-section.** For national highways: two lanes, single carriageway, 5.5 meters (m) wide with earth shoulders 1.5 m wide. For feeder roads: single lane, single carriageway, 3.50 m wide, with 0.5 m earth shoulders and passing bays.
- (ii) **Rights-of-way.** A 30 m wide right of way has been recommended for all project roads to accommodate future road connections or changes in alignment, road width, or junction layout of existing roads, and to improve the safety, safety operation, and appearance of the roads.
- (iii) **Design speed.** As per the Bhutanese standards, 60 km per hour will be the design speed. This is, however, only economically justifiable in flat or rolling

terrain. As all roads are in steep mountains and deep gorges, design speeds of 40 km per hour were justifiable and therefore applied.

- (iv) **Design life.** Twenty years after opening to traffic (2032).
- (v) **Pavement.** The pavements are designed for 10 years and take into account projected traffic loading, existing pavement structure, subgrade California bearing ratio (a test of subgrade mechanical strength), and quality of materials available. For national highways, double bituminous surface treatment surfacing, wet mix macadam base course, and profile correction is recommended. For feeder roads, unsealed gravel surface course is recommended.
- (vi) **Bridges.** The highway has several bridges. The bridge types recommended is reinforced cement concrete (RCC) for up to 20 m spans.
- (vii) **Drainage.** The drainage system recommended includes culverts, bridges, and side drains, cut-off drains, and catch water drains. RCC slab culverts are recommended.

5. In addition, the following safety and roadside features will be incorporated:

- (i) Road safety structures (breast walls, retaining walls, toe walls, and check walls), will be reconstructed. Their heights range from 1.0 m to 8.0 m, with an average of 2.7 m.
- (ii) Bus stops with passenger shelters and truck turnoffs will be constructed at appropriate locations.
- (iii) Guard rails and crash barriers will be constructed at identified high-risk points (although this is limited to what is economically justifiable); however, the following engineering measures will increase safety:
 - (a) all curve radii will correspond to design speeds,
 - (b) all required widening at curves will be provided,
 - (c) adequate road width will be provided with easy gradients,
 - (d) vision berms will be provided at curves, and
 - (e) proper road markings and signs will be provided.
- (iv) Proper road furniture—including road signs, road markings, kilometer posts, right-of-way pillars, and guard posts—will be provided.

6. Construction will incorporate environmental consideration in design and construction now being applied on selected road projects in Bhutan. This will minimize damage to the natural environment by

- (i) using controlled blasting,
- (ii) limiting the use of bulldozers (excavator-tipper combinations will be used instead),
- (iii) using log and boulder barriers to control slipping of blasted or excavated materials, and
- (iv) incorporating bioengineering techniques.

DETAILED COST ESTIMATES AND FINANCING PLAN

(\$ million)

Item	Foreign Exchange	Local Currency	Total	ADB Financing	Government Financing	ADB Share (%)	Government Share (%)
A. Land Acquisition and Resettlement	0.00	1.23	1.23	0.00	1.23	0.0	100.0
B. Civil Works^a							
1. Manitar–Raidak Road	3.30	2.20	5.49	3.86	1.64	70.2	29.8
2. Raidak–Lhamaozingkha Road	5.88	3.92	9.79	6.88	2.92	70.2	29.8
3. Panbang–Amshingwoong (Nganglam)	7.64	5.09	12.74	8.94	3.79	70.2	29.8
4. Tsebar–Mikuri–Durung Ri Road	6.18	4.12	10.29	7.23	3.07	70.2	29.8
5. Samdrupcholing–Samrang Road	2.68	1.79	4.47	3.14	1.33	70.2	29.8
Subtotal (B)	25.67	17.11	42.79	30.04	12.75	70.2	29.8
C. Design Consultant	0.70	0.80	1.50	1.50	0.00	100.0	0.0
D. Supervision Consultant	1.00	1.50	2.50	2.50	0.00	100.0	0.0
E. Capacity Building (Equipment)	1.00	0.00	1.00	1.00	0.00	100.0	0.0
Subtotal (A+B+C+D+E)	28.37	20.65	49.02	35.04	13.98	71.5	28.5
F. Contingencies							
Physical Contingency ^b	1.28	0.92	2.20	1.55	0.66	70.2	29.8
Price Contingency ^c	0.37	2.72	3.10	2.17	0.92	70.2	29.8
Total	30.03	24.29	54.32	38.76	15.56	71.4	28.6

ADB = Asian Development Bank.

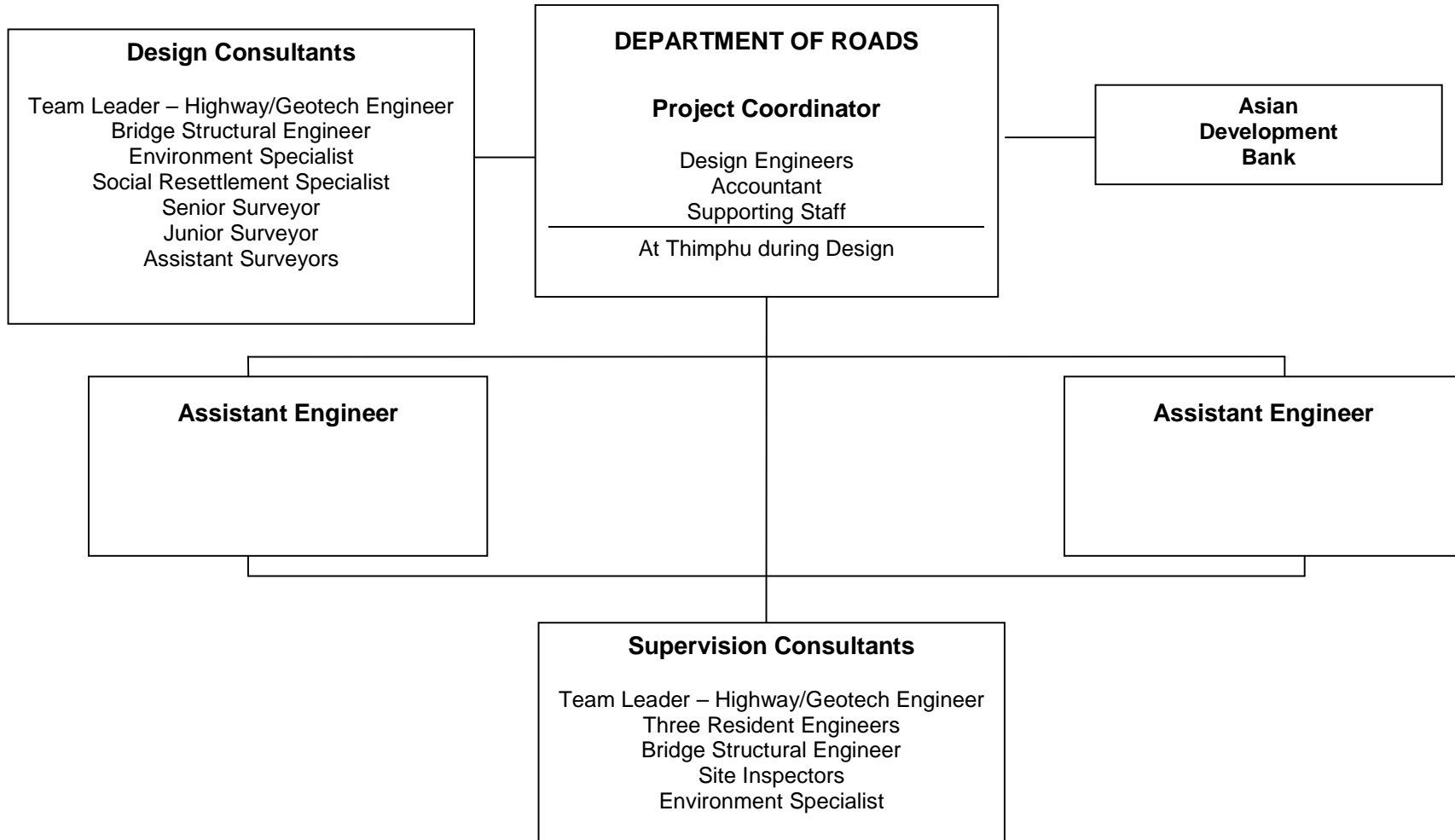
^a Cost estimates are based on preliminary design and includes environmental mitigation. Cost estimates include taxes and duties estimated at about \$3.8 million.

^b Physical contingencies are computed at 5% of civil works.

^c Price contingencies computed at 0.5% on foreign exchange costs and 5% on local currency costs.

Source: Asian Development Bank.

PROJECT ORGANIZATION STRUCTURE



Source: Asian Development Bank

IMPLEMENTATION SCHEDULE

Item	2009		2010				2011				2012				2013			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
A. Detailed Design																		
1. Selection																		
2. Detailed Design																		
B. Construction Supervision Consultants																		
1. Selection																		
2. Supervision																		
C. Civil Works																		
1. Procurement																		
2. Construction																		

Source: Asian Development Bank

INDICATIVE CONTRACT PACKAGES^a

Road Section	Package Description	Package No.	Approx. Length (km)	Estimated Cost (\$)	Proposed Duration (years)
National Highways					
Manitar–Raidak	Manitar–km 20	NH-01	20	3.2	3
	Km 20–Raidak	NH-02	17	2.9	3
	Raidak and Kalikhola bridges	BR-01		2.4	2.5
Raidak–Lhamoizingkha	Raidak–Lhamoizingkha	NH-03	25	8.5	3
Panbang–Amshingwong (Nganglam)	Panbang–km 18	NH-04	18	6.5	3
	Km 18–Amshingwong	NH-05	18	7.7	3
Sandrupcholing–Samrang	Sandrupcholing–Samrang	NH-06	23	2.8	2.5
	Diklai and Samrang bridges	BR-02		2.5	2.5
Feeder Roads					
Tsebar–Mikuri	Tsebar–Hye River bridge (not included) km 24	FR-01	24	4.3	2.5
	Drungri–Hye River bridge (included) km 24	FR-02	38	7.1	3

km = kilometer.

^a Includes physical contingencies.

Source: Department of Roads.

PROCUREMENT PLAN

Basic Data

Project Name: Road Network Project II	Executing Agency: Department of Roads
Country: Bhutan	Grant Number:
Grant Amount: \$38.76 million	Date of this Procurement Plan: 20 August 2009
Date of First Procurement Plan:	

A. Process Thresholds, Review, and 18-Month Procurement Plan

1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works	
Method	Threshold
International Competitive Bidding (ICB) for Works	Above \$1,000,000
National Competitive Bidding (NCB) for Works	\$100,000 up to \$1,000,000
Shopping for Works	Below \$100,000
International Competitive Bidding for Goods	Above \$500,000
National Competitive Bidding for Goods	\$100,000 up to \$500,000
Shopping for Goods	Below \$100,000

2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement of Goods and Works		
Procurement Method	Prior or Post	Comments
International Competitive Bidding (ICB) Works	Prior	Single-Stage; Two-Envelope
National Competitive Bidding (NCB) Works	Prior	Single-Stage; Two-Envelope
Shopping for Works	Prior	
International Competitive Bidding for Goods	Prior	
National Competitive Bidding for Goods	Prior	
Shopping for Goods	Prior	

3. Consulting Services

3. Consulting services of international consulting firms in association with domestic firm will be engaged to prepare detailed engineering design and bidding documents, and to provide construction supervision of all works will be engaged for the project.

Recruitment of Consulting Firms		
Selection Method	Prior or Post	Comments
Quality- and Cost-Based Selection (QCBS)	Prior	
Single Source Selection (SSS)	Prior	

4. Goods and Works Contracts Estimated to Cost More Than \$1 Million

4. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Procurement Method	Prequalification of Bidders (Yes/No)	Advertisement Date (quarter/year)	Comments
Upgrading and construction of roads (Refer to Indicative Packages in Appendix 8)	\$2.4 million - \$8.5 million (10 packages)	ICB	No	Q2/2010	Qualification requirements will be based on annual workloads of the contract because the project roads in harsh mountain areas are only accessible from one side and, irrespective of the contract size, the work progress is linear to one-direction with very limited work space as a rolling progress of a series of continuous works of small stretch.

5. Consulting Services Contracts Estimated to Cost More Than \$100,000

5. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Recruitment Method	Advertisement Date (quarter/year)	International or National Assignment	Comments
Detailed Engineering	\$1.5 million	SSS	Q3/2009	International Firm with National Consultants	Refer to Supplementary Appendix F
Construction Supervision	\$2.5 million	QCBS	Q2/2010	International Firm with National Consultants	

B. Indicative List of Packages Required Under the Project

6. The following table provides an indicative list of all procurement (goods, works and consulting services) over the life of the project. Contracts financed by the Borrower and others should also be indicated, with an appropriate notation in the comments section.

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Works	\$48 million	10	ICB	YES	ADB is currently updating the list of countries eligible for domestic preference, which will be issued shortly. If Bhutan is not on the updated list of eligible

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
					countries at the time of bidding, the domestic preference referred to elsewhere in this report will not be applicable to this Project.
Goods	\$1.0 million	Various	NCB and Shopping	NO	
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Consulting Services	\$2.5 million	2	SSS and QCBS	Bio (for SSS) and Full	

C. National Competitive Bidding

1. General

7. The procedures to be followed for national competitive bidding shall be the open tendering/bidding method set forth in the *Procurement Manual, Rules and Procedures 2009* of the Government of Bhutan with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the *Procurement Guidelines (2007, as amended from time to time)* of the Asian Development Bank (ADB).

2. Registration

- (i) Bidding shall not be restricted to pre-registered firms under the national registration system of the Construction Development Board (CDB), and such registration shall not be a condition for the submission of bids in the bidding process.
- (ii) Where registration is required prior to award of contract, bidders: (a) shall be allowed a reasonable time to complete the registration process; and (b) shall not be denied registration for reasons unrelated to their capability and resources to successfully perform the contract, which shall be verified through post-qualification.

3. Prequalification

8. Post qualification shall be used unless prequalification is explicitly provided for in the grant agreement/procurement plan. Irrespective of the procedure applied (whether prequalification or post-qualification), no domestic or foreign contractor shall be precluded from participation.

9. If prequalification is undertaken, the prequalification criteria should include "eligibility requirements", "financial situation", "pending litigation", and "experience". Technical capacity (personnel and equipment) should not be part of the prequalification criteria.

10. A minimum period of 28 days shall be allowed for the preparation and submission of prequalification applications. The 28-day period is to be counted from either (i) date of publication of the prequalification invitation in a local newspaper or website, or (ii) commencement date for issue of the prequalification documents to interested parties, whichever of the two dates is the latest up to the date set for the deadline for submission of the prequalification applications.

4. Procurement Process

11. One envelope process shall be used unless two-stage process is explicitly provided for in the grant agreement/procurement plan.

5. Advertising

12. Bidding of NCB contracts estimated at \$500,000 or more for goods and related services or \$1,000,000 or more for civil works shall be advertised on ADB's website via the posting of the Procurement Plan.

6. Bidding Documents

13. Procuring entities shall use standard bidding documents acceptable to ADB for the procurement of goods, works, and related services, based ideally on the standard bidding documents issued by ADB.

7. Packaging

14. Slicing or splitting of contracts within a package shall not be used to change the contract sizes and the corresponding methods of procurement indicated in the grant agreement/procurement plan.

8. Bid Security and Performance Security

15. Where required, bid security (earnest money), retention money (or security deposit) and performance security (or performance guarantee) shall be in the form of a demand draft, certified check, letter of credit, or bank guarantee from a reputable bank.

16. The terms and conditions of bid security as well as retention money and performance security shall be clearly specified in the forms provided and/or conditions of contract in terms of periods of validity and grounds for forfeiture, or release of the bank guarantees, or refund of the cash security deposits.

9. Preferences

- (i) No preference of any kind shall be given to domestic bidders or for domestically manufactured goods.
- (ii) Foreign suppliers and contractors from ADB member countries shall be allowed to bid, without registration, licensing, and other government authorizations, leaving compliance with these requirements for after award and before signing of contract.

10. Rejection of All Bids and Re-bidding

17. Bids shall not be rejected and new bids solicited without the ADB's prior concurrence.

11. Low Bids and Unbalanced Bids

18. Bids shall not be rejected solely because the bid price (i) is lower by a certain percentage of the contract cost estimate, or (ii) seriously unbalanced or front loaded. Instead of rejection of the bids, the bidder whose bid is determined to be the lowest evaluated substantially responsive bid may be required by the Executing Agency/Implementing Agency to provide a higher performance security to a level sufficient to protect the Executing Agency/Implementing Agency against financial loss in the event of default of the successful bidder under the contract.

12. Participation by Government-Owned Enterprises

19. Government-owned enterprises in the Bhutan shall be eligible to participate only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the procuring entity, or the Project Executing Agency or Implementing Agency.

13. Member Country Restrictions

20. Bidders must be nationals of member countries of ADB, and offered goods, works, and services must be produced in and supplied from member countries of ADB.

14. Exclusion of Bidders

21. Exclusion of bidders for reasons cited in para. 2.1.4.1 of the *Procurement Manual, Rules and Procedures* 2009, including inclusion on national sanctions lists may be applied only with prior approval of ADB. Rejection of bids on account of "past poor performance" of bidders shall also be subject to ADB's prior approval.

15. Disclosure of Decision on Contract Awards

22. At the same time that notification on award of contract is given to the successful bidder, the results of bid evaluation shall be published in a local newspaper, or a well-known freely accessible website identifying the bid and lot numbers and providing information on (i) name of each bidder who submitted a bid; (ii) bid prices as read out at bid opening; (iii) name of bidders whose bids were rejected and the reasons for their rejection; and (iv) name of the winning bidder, and the price it offered, as well as duration and summary scope of the contract awarded. The Executing Agency/Implementing Agency/contracting authority shall respond in writing to unsuccessful bidders who seek explanations on the grounds on which their bids are not selected.

OUTLINE TERMS OF REFERENCE FOR TECHNICAL ASSISTANCE FOR CAPACITY BUILDING OF THE DEPARTMENT OF ROADS

A. Objective

1. The main objective of the consulting services is to support the Government of Bhutan in improving the sector management performance through capacity building of the Department of Roads (DoR). The focus of the technical assistance (TA) will equip DoR engineers with (i) modern road technologies suited for Bhutan in the area of survey, design, and construction; and (ii) enhanced analytical skills to utilize road asset management systems in an optimal manner in the Bhutan context.

B. Scope of Services

2. The consultants will undertake the services in close consultation with the director general and chief engineers of the DoR. They will also conduct training and workshops as required at the district and headquarters levels. The consultant will undertake tasks under two components: modern road technologies, and road asset management.

1. Modern Road Technologies

3. The objective of this task is to equip DoR engineers with knowledge of and skills in modern road technologies in survey, design, and construction of mountainous roads. The role of the consultant will therefore be to work with the DoR in the same office and assist the DoR engineers in all aspects for them to conduct all the required tasks in developing roads. The tasks should be conducted in a timely manner, taking into account the timing of design and construction.

4. The consultants will do, but not be limited to, the following:

- (i) Provide examples of international best practices for mountainous roads development in survey, design, and construction with environmental considerations.
- (ii) Review, discuss, and propose enhancement, if any, to the existing standards and methods of survey, design, and construction, in comparison with international best practice, taking into account the Bhutanese conditions.
- (iii) Develop a toolkit or handbook of international best practices applicable to Bhutan for DoR engineers to use in planning survey, design, and construction.
- (iv) Identify projects or road sections on which to adopt international best practices at each stage of survey, design, and construction, including the Second Road Network Project.
- (v) Discuss the applicability of practices and apply appropriate methods to undertake design, survey, and construction for identified road sections/projects.
- (vi) Consult with selected local communities and environment-related agencies such as the Natural Conservation Division to reflect appropriate environmental considerations with a balance of cost and time efficiency in road development.
- (vii) Provide training for DoR engineers on selected modern road technologies, including environmental considerations, in survey, design, and construction. Workshops will be held for disseminating the concept and the method.
- (viii) Assist the DoR further in planning survey, design, and construction on other road sections.

- (ix) Recommend a training program for DoR engineers to have for updating knowledge and skills in road technologies.
- (x) Identify issues and problems, and recommend the required changes to the toolkit/handbook and DoR design standards/manuals.

2. Road Asset Management

5. The objective of this task is to increase DoR engineers' knowledge of appropriate use of road asset management systems in the Bhutan context. The role of the consultant will therefore be to work with the DoR in the same office and assist DoR engineers in undertaking road asset management planning. This will be undertaken in close coordination with the director general of the DoR. The consultant will reflect discussions and outputs of the Modern Road Technologies component.

6. The consultants will do, but not be limited to, the following:

- (i) Develop and recommend the overall architecture, enabling decision makers to propose and allocate maintenance budgets efficiently and objectively.
- (ii) Within the overall architecture of decision-making systems of budget proposal and allocation, determine the role and applicability of the computerized systems in the Bhutan context, including the constraints of the computerized systems in Bhutan as road deterioration is mainly due to natural cause such as landslides.
- (iii) Determine practical and appropriate level of detail for the purpose of decision making at headquarters and in the field offices, especially for decisions regarding the annual proposal and allocation into each division, subdivision, and section/unit.
- (iv) Identify road sections where the computerized system is applicable, e.g., where deterioration is mostly caused by traffic loads (including the east–west highway and the north–south highway) and where minimal damage is due to natural causes.
- (v) Decide how to determine the maintenance needs for road sections where the computerized system is not applicable, e.g., where there are low traffic loads and where deterioration is mostly due to natural causes.
- (vi) Develop a practical and appropriate scheme/program for data collection, e.g., data collection cycle, required details of interval, etc., at this initial stage.
- (vii) Provide training to and assist the DoR in data collection.
- (viii) Develop practical and appropriate level of use of computerized asset management systems.
- (ix) Set up the overall analysis systems, including a manual for the DoR to use, for road asset management planning over the Bhutan road network which is the responsibility of the DoR.
- (x) Execute the overall systems, run the computerized systems for selective road sections, and provide analysis for annual budget proposal and allocation.
- (xi) Recommend further areas of improvement and a training program.

C. Reporting

7. The consultants will provide the Asian Development Bank (ADB) with progress reports on achievements, problems, and recommendations. The consultants will prepare specific working papers in accordance with each item, or, as appropriate, a group of items, in the terms of reference (TOR). Upon completion of their services, the consultants will prepare a draft final

report covering all tasks required by the TOR. A final report will be prepared 30 days after the tripartite review meeting with the DoR, ADB, and the consultants.

8. The consultants, in consultation with the DoR, will prepare a training program in the areas specified in the TOR. The consultants will prepare comprehensive training proposals, including selection criteria for candidates, training objectives, and cost estimates.

D. Staffing

9. The technical assistance (TA) will be implemented for 6 months from December 2009 to June 2010. International inputs of 13 person-months are required, including (i) a road engineer as team leader, experienced in mountain roads (5 person-months); (ii) a bridge/structural engineer, experienced in mountain roads (1.5 person-months); (iii) an environment specialist, experienced in design and construction of mountain roads (2 person-months); and (iv) a road asset management systems specialist, experienced in pavement and maintenance of mountain roads (4.5 person-months). All experts should have experience in mountain roads both in developing and developed countries

E. Cost Estimates

10. The total cost of the TA is estimated to be \$500,000 equivalent. ADB will finance \$400,000 equivalent on a grant basis from its TA funding program (Technical Assistance Special Fund-IV). Disbursements under the TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook*.¹ The Government's counterpart in-kind contribution will be \$100,000 equivalent (Table A10).

¹ ADB. 2008. *Technical Assistance Disbursement Handbook*. Manila.

Table A10: Cost Estimates
(\$'000)

Item	Total Cost
A. Asian Development Bank Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	234.00
b. International and Local Travel	20.00
c. Reports and Communications	3.00
2. Equipment (computer, printer, vehicles, etc.) ^b	40.00
3. Workshops, Training, Seminars, and Conferences	50.00
4. Surveys	5.00
5. Miscellaneous Administration and Support Costs	5.00
6. Representative for Contract Negotiations	6.00
7. Contingencies	37.00
Subtotal (A)	400.00
B. Government Financing	
1. Office Accommodation and Transport	50.00
2. Remuneration and Per Diem of Counterpart Staff	30.00
3. Others	20.00
Subtotal (B)	100.00
Total	500.00

^a Financed by the Asian Development Bank's technical assistance funding program (Technical Assistance Special Fund-IV).

^b Equipment will be turned over to the Government after completion of the technical assistance.

Source: Asian Development Bank estimates.

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country/Project Title: Bhutan/Road Network Project II

Lending/Financing
Modality:

Project Grant

Department/
Division:

South Asia Department/
Transport and Communications Division

I. POVERTY ANALYSIS AND STRATEGY

A. Link to the National Poverty Reduction Strategy and Country Partnership Strategy

The Bhutan National Poverty Reduction Strategy identifies remoteness and isolation as the major causes of poverty in Bhutan, and prioritizes the extension and improvement of physical infrastructure, including communications and planned urbanization, as strategic interventions to combat poverty. The Government has given the development of road infrastructure the highest priority in the 10th Five-Year Plan. The Bhutan country operations business plan (2008–2010)^a prioritizes Asian Development Bank (ADB) assistance to the transport sector to enhance the connectivity and accessibility of remote and rural areas.

More than half of the population of Bhutan lives in rural areas. Road network connectivity is therefore a key factor in the Government's overall development goals. For this reason, the Government is highly committed to developing and promoting the proposed Project, from which a larger part of the population is expected to benefit. Access to roads in rural areas is a key element of human development and economic growth. It is also expected to improve health care services and education. Most of all, it means a greater range of opportunities for rural people to improve their quality of life and capacity to generate income. It will also improve the living conditions of women and children. Another immediate tangible benefit is the reduction of time spent in travelling and therefore the increase in productivity by more business opportunities and employment in rural areas of Bhutan.

B. Poverty Analysis

Targeting Classification: General intervention

1. Key Issues

Remoteness and isolation are the major causes of poverty in Bhutan. The construction of national highways and feeder roads covering 183.0 kilometers (km) (Manitar–Raidak, 37.0 km; Raidak–Lhamoizhingkha, 25.0 km; Panbang–Amshingwoong, 36.0 km; Samdrupcholing–Samrang, 23.0 km; and Tsebar–Mikuri–Shingchungri, 62.0 km) will have direct benefits for the local population (poor people, vulnerable groups, and households headed by women). The Project is expected to improve the quality of life and bring new economic opportunities to remote areas of the country. It is also expected to increase economic activity (particularly in small retail) at the road sites and increased accessibility due to construction of access roads connected to the main roads.

The socioeconomic impacts of the Project will be very positive: access to health care facilities and education, improved communication facilities, easy transportation of cash crops, and vibrant growth of economic activities in the rural villages. Rural electrification is also expected to improve once road connectivity is established. This will permit students to study for longer hours in the evening, and contribute to a cleaner living environment through the use of electricity and gas for cooking, thus also saving the forests from further degradation.

The income-generation activities of the population of the immediate and wider project influence areas are expected to increase through sales of local produce at the road sites almost on a daily basis. As a result, the Project will significantly reduce the poverty level and improve the quality of life in the five beneficiary *dzongkhags* (districts)—Chhukha, Dagana, Pemagatshel, Samdrupjongkhar, and Zhemgang—through connectivity of these remote rural areas.

2. Design Features. Not Applicable.

C. Poverty Impact Analysis for Policy-Based Lending

1. Discuss the impact channels of the policy reform(s) (direct and indirect, short and medium term) to the country and major groups affected. **Not Applicable.**
2. Discuss the impact of the policy reform(s) on vulnerable groups and ways to address it/them (refer to social analysis). **Not Applicable.**
3. Discuss how the policy reform(s) contribute(s) to poverty reduction, pro-poor growth, and the MDGs. **Not Applicable.**

II. SOCIAL ANALYSIS AND STRATEGY

A. Findings of Social Analysis

This analysis covers the poverty and social analysis of the proposed five roads under the Project. The household survey covered 68 villages: 22 villages on the Manitar–Raidak road, 16 villages on the Raidak–Lhamoizhingkha road, 8 villages on the Panbang–Amshingwoong road, 8 villages on the Samdrupcholing–Samrang road, and 14 villages on the Tsebar–Mikuri–Shingchungri road. The questionnaire developed for this survey was based on the requirements of the Project terms of reference, with reference to ADB's *Guidelines for the Incorporation of Social Dimensions in ADB Operations* (1993)^b and ADB's *Handbook for Poverty and Social Analysis* (2001)^c.

The survey was based on a random sampling approach using population size. The household survey began meeting with the village headman or a representative of the geog (block), through which either the existing road passed or through which the proposed national roads might be aligned. Twenty percent of the total households of *gewogs* (villages) were selected for interview by randomly selecting the visibly poor and rich households. Consultation with the communities (324 male and 162 female participants) and 16 focus group discussions at different levels were another component. These activities were conducted simultaneously with the household survey and by the same survey team at different times and locations. The discussions were conducted in different part of the villages falling under the same geog and within the project influence area regardless of the affected persons. All the respondent sample households reported that most women spend time on purchasing household items, collecting drinking water and fuel wood and supporting cultivation. Women in villages are also actively involved in religious and cultural activities.

Since most of the villages are located far from motorable roads, the villagers have to walk a considerable distance to reach the road heads. There are community, primary, lower secondary, middle secondary, higher secondary, and private schools in all the five dzongkhags. In most of the villages, children walk for 30 minutes to 3 hours to get to school. There are basic health units, outreach clinics, and general hospitals in all the five dzongkhags. Not all the houses have drinking water due to poor water sources.

The people in the influence areas are agricultural farmers, with 90% being engaged in agricultural activities. Some households reported combining their agricultural activities with shopkeeping and with some wage activities. The main cereals grown are rice, maize, wheat, and millet. The cash crops grown are mainly areca nut, oranges, and cardamom. The villagers also tend to cattle farming and produce milk, cheese, and butter, which are locally consumed, and the surpluses are sold.

B. Consultation and Participation

1. A socioeconomic survey covering 20% of the total households of geogs, and 16 focus group discussions were conducted in February–April 2009 to gather feedback from the local communities on the proposed development, perceived socioeconomic impacts, and acceptable alignment of the access road. These discussions were held with men, women, farmers, high-income groups, poor people, shopkeepers, and government officials to ensure a comprehensive perspective on the project as well as its impacts.

2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring?

Information sharing Consultation Collaborative decision making Empowerment

3. Was a C&P plan prepared? Yes No

The C&P plan was prepared to inform and collate public views to facilitate informed decisions.

C. Gender and Development

1. Key Issues

Gender participation was ensured during the course of the social study by undertaking a process of gender analysis so as to assess the impact of the Project. Sixteen focus group discussions were undertaken with women belonging to different socioeconomic groups such as high-income, poor, and women of different ethnicity. These discussions revealed that the majority of the women felt that the roads will benefit them as they will be able to transport their yield for market and this will help increase income. The study revealed no significant discrimination against women in Bhutan. The socioeconomic survey showed that, although some activities may be predominantly undertaken by women or men, women and men traditionally have equal status for most socioeconomic activities. The studies also revealed that rural women are becoming more visible in both household and other activities, and women are frequently taking on additional work to ensure a comfortable lifestyle for their families. Along with men in the project areas, women will benefit from (i) easier access to external markets, (ii) increased local retailing opportunities, and (iii) easier access to health care centers and education facilities. Women may also benefit more than men from the increased access to schools. Traditionally enrolment rates in schools have been lower for girls than for boys.

2. Key Actions: Measures included in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making process:

Gender plan Other actions/measures No action/measure

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Involuntary Resettlement	Limited	A 100% census was undertaken based on preliminary design to identify all project-related impacts. The survey identified that 279 households will incur impacts on assets such as agricultural land, residential and commercial assets, trees, etc. Resettlement plans have been prepared to mitigate and address all losses.	<input type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action
Indigenous Peoples	No Impact	No indigenous people were identified therefore no specific action was foreseen.	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input checked="" type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input type="checkbox"/> Core labor standards		The Project construction is expected to generate employment opportunities for local communities during the construction phase. Men and women will be paid equally for equal work. The DoR will ensure that all civil works will comply with all applicable labor laws, and child labor is not used for construction and maintenance activities.	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action
Affordability		The Project will reduce transport costs and increase the mobility of the local population in the Project areas.	<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action
Other Risks and/or Vulnerabilities <input checked="" type="checkbox"/> HIV/AIDS <input checked="" type="checkbox"/> Human trafficking <input type="checkbox"/> Others(conflict, political instability, etc), please specify		<p>The Government has been successfully carrying out awareness campaigns and free health care to minimize the spread of HIV/AIDS in various part of the country.</p> <p>The social assessments undertaken have not revealed any significant risks on social aspects such as gender, HIV/AIDS, and human trafficking.</p>	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
		However, the DoR will ensure that all civil works contractors disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS for those employed during construction. Contracts for all subprojects will include specific clauses on these undertakings, and compliance will be strictly monitored by the DoR, with support from the supervision consultant during project implementation.	
IV. MONITORING AND EVALUATION			
Are social indicators included in the design and monitoring framework to facilitate monitoring of social development activities and/or social impacts during project implementation? Yes			

^a ADB. 2007. *Bhutan Country Operations Business Plan 2008-2010*. Manila.

^b ADB. 1993. *Guidelines for the Incorporation of Social Dimensions in ADB Operations*. Manila.

^c ADB. 2001. *Handbook for Poverty and Social Analysis*. Manila.