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Report No: 65543-BD

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 195 MILLION
(US$302 MILLION EQUIVALENT)

TO

THE PEOPLE'S REPUBLIC OF BANGLADESH

FOR A

SECOND RURAL TRANSPORT IMPROVEMENT PROJECT

August 1, 2012

Sustainable Development Unit
Bangladesh Country Management Unit
South Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective {10 March 2012})

Currency Unit = Taka
80 Taka = US$ 1
US$1.53 = SDR 1

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

| | | | |
|---|---|---|---|
| AAEC | Awareness, Advocacy and Educational Campaign | LGRD | Local Government, Rural Development |
| ACC | Anti-Corruption Commission | MIS | Management Information System |
| ARI | Accident Research Institute | MLGRD&C | Ministry of Local Government, Rural Development and Cooperatives |
| BUET | Bangladesh University of Engineering and Technology | ORA | Operational Risk Assessment |
| CRRSU | Central Rural Road Safety Unit | PBMC | Performance-Based Maintenance Contract |
| CSO | Civil Society Organization | PIU | Project Implementation Unit |
| DANIDA | Danish International Development Agency | PPC | Project Preparation Consultant |
| ECA | Environment Conservation Act | PRSP | Poverty Reduction Strategy Paper |
| ECR | Environmental Conservation Rules | PSC | Project Steering Committee |
| EIA | Environmental Impact Assessment | RMMS | Road Maintenance Management Systems |
| EIRR | Economic Internal Rate of Return | RP | Resettlement Plan |
| EMF | Environmental Management Framework | RRMAIDP | Rural Roads and Market Access Infrastructure Development Project |
| FGD | Focus Group Discussions | RRS | Rural Road Safety |
| GCM | Growth Center Markets | RTIP-I | Rural Transport Improvement Project |
| GoB | Government of Bangladesh | RTS | Rural Transport Safety |
| GRC | Grievance Redress Committee | SCC | Suggestions and Complaints Committee |
| ICT | Information and Communication Technologies | SCM | Suggestions and Complaints Mechanism |
| IDA | International Development Association | SIA | Social Impact Assessment |
| IDSS | Integrated Decision Support System | SIL | Specific Investment Loan |
| IPP | Indigenous Peoples Plan | SIMF | Social Impact Management Framework |
| ISP | Implementation Support Plan | TSA | Transport Safety Assessment |
| IWT | Inland Water Transport | UFMS | Unified Financial Management System |
| LCS | Labor Contracting Societies | UR | Union Roads |
| LGED | Local Government Engineering Department | UZR | Upazila Roads |
| LGI | Local Government Institutions | WMS | Women Market Sections |

| | |
|---|---|
| Regional Vice President: | Isabel M. Guerrero |
| Country Director: | Ellen A. Goldstein |
| Sector Director: | John Henry Stein |
| Acting Sector Manager: | Binyam Reja |
| Task Team Leader: | Manzoor Rehman/ Reefat Sultana |

**Bangladesh: Second Rural Transport Improvement Project**
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# PAD DATA SHEET

*Bangladesh*

*Second Rural Transport Improvement Project (P123828)*

# PROJECT APPRAISAL DOCUMENT

*SOUTH ASIA*

*SASDT*

## Basic Information

| | | | |
|---|---|---|---|
| Date: | 01-Aug-2012 | Sectors: | Rural and Inter-Urban Roads and Highways (97%), Agro-industry, marketing, and trade (2%), Ports, waterways and shipping (1%) |
| Country Director: | Ellen A. Goldstein | Themes: | Rural services and infrastructure (88%), Rural policies and institutions (10%), Rural markets (2%) |
| Sector Manager/Director: | Binyam Reja/John Henry Stein | | |
| Project ID: | P123828 | EA Category: | A - Full Assessment |
| Lending Instrument: | Specific Investment Loan | | |
| Team Leader(s): | Manzoor Ur Rehman | | |

Joint IFC: No

Borrower: Economic Relations Division, Ministry of Finance

Responsible Agency: Local Government Engineering Department

| | | | |
|---|---|---|---|
| Contact: | Md. Mostafa Kamal | Title: | Project Director |
| Telephone No.: | 9122-435 | Email: | pdrtip_lged@yahoo.com |

Project Implementation Period: Start Date: 18-Dec-2012 End Date: 30- Apr- 2018

Expected Effectiveness Date: 18-Dec-2012

Expected Closing Date: 30-Apr-2018

## Project Financing Data(US$M)

| | | |
|---|---|---|
| [ ] Loan | [ ] Grant | [ ] Other |
| [ X ] Credit | [ ] Guarantee | |

### For Loans/Credits/Others

Total Project Cost (US$M): 417.00

Total Bank Financing (US$M): 302.00

| Financing Source | Amount(US$M) |
|---|---|
| BORROWER/RECIPIENT | 115.00 |
| International Development Association (IDA) | 302.00 |
| Total | 417.00 |

### Expected Disbursements (in USD Million)

| Fiscal Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 0000 | 0000 |
|---|---|---|---|---|---|---|---|---|---|
| Annual | 0.00 | 20.00 | 40.00 | 70.00 | 70.00 | 70.00 | 32.00 | 0.00 | 0.00 |
| Cumulative | 0.00 | 20.00 | 60.00 | 130.00 | 200.00 | 270.00 | 302.00 | 0.00 | 0.00 |

### Project Development Objective(s)

The proposed Project Development Objective is:

To improve rural accessibility in project areas (covering 26 districts) and strengthen institutional capacity for sustainable rural road maintenance.

### Components

| Component Name | Cost (USD Millions) |
|---|---|
| Accessibility Improvement Component | 338.10 |
| Institutional Strengthening, Capacity Building and Governance Enhancement Component | 11.90 |
| Rural Transport Safety Component | 3.50 |
| Contingent Emergency Response Component | 0.00 |

## Compliance

### Policy

| | | |
|---|---|---|
| Does the project depart from the CAS in content or in other significant respects? | Yes [ ] | No [ X ] |
| Does the project require any waivers of Bank policies? | Yes [ ] | No [ X ] |
| Have these been approved by Bank management? | Yes [ ] | No [ X ] |
| Is approval for any policy waiver sought from the Board? | Yes [ ] | No [ X ] |
| Does the project meet the Regional criteria for readiness for implementation? | Yes [ X ] | No [ ] |

| Safeguard Policies Triggered by the Project | Yes | No |
|---|---|---|
| Environmental Assessment OP/BP 4.01 | X | |
| Natural Habitats OP/BP 4.04 | X | |
| Forests OP/BP 4.36 | | X |
| Pest Management OP 4.09 | | X |
| Physical Cultural Resources OP/BP 4.11 | X | |
| Indigenous Peoples OP/BP 4.10 | X | |
| Involuntary Resettlement OP/BP 4.12 | X | |
| Safety of Dams OP/BP 4.37 | | X |
| Projects on International Waterways OP/BP 7.50 | X | |
| Projects in Disputed Areas OP/BP 7.60 | | X |

### Legal Covenants

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Annual work plan for civil works for 2nd. year of project implementation onwards | X | | Yearly |

**Description of Covenant**

The recipient shall prepare an annual work plan for civil works commencing of the second year of project implementation until project completion satisfactory to IDA.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Completion of land acquisition actions. | X | | |

**Description of Covenant**

Except as IDA shall otherwise agree, the Recipient shall ensure that land acquisition actions under a Sub-project are completed before awarding the contract for civil works under said Sub-project.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Implementation of Resettlement Action Plan. | X | | |

**Description of Covenant**

The Recipient shall not displace any affected persons under a Sub-project until and unless the implementation of the Resettlement Action Plan for the Sub-project has been completed.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Selection of roads under Sub Component A2. | X | | |

**Description of Covenant**

The Recipient shall select the roads for rehabilitation and periodic maintenance, and for maintenance through PBMC using criteria and methodologies agreed with IDA.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Maintenance Policy. | | 01-Nov-2012 | |

**Description of Covenant**

The Recipient shall adopt a rural roads maintenance policy acceptable to IDA.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Business Plan to carry out Maintenance Policy. | | 01-Apr-2013 | |

**Description of Covenant**

The Recipient shall prepare and adopt a 3-year business plan to carry out the rural roads maintenance policy.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Governance and Accountability Action Plan. | X | | |

**Description of Covenant**

The Recipient shall ensure that the project is carried out in accordance with the provisions of the Governance and Accountability Action Plan.

## Team Composition

**Bank Staff**

| Name | Title | Specialization | Unit |
|---|---|---|---|
| Jean-Noel Guillossou | Program Manager | Program Manager | AFTTR |
| Manzoor Ur Rehman | Sr Transport. Spec. | Team Leader | SASDT |
| Shakil Ahmed Ferdausi | Senior Environmental Specialist | Senior Environmental Specialist | SASDI |
| Junxue Chu | Senior Finance Officer | Senior Finance Officer | CTRLN |
| Gizella Diaz | Program Assistant | Program Assistant | SASDO |
| Elena Y. Chesheva | Operations Officer | Operations Officer, Road Safety | SASDT |
| Natalya Stankevich | Transport Specialist | Transport Specialist | ECSS5 |
| Burhanuddin Ahmed | Sr Financial Management Specialist | Sr Financial Management Specialist | SARFM |
| Reefat Sultana | Infrastructure Specialist | Co-Team Leader | SASDT |
| Marghoob Bin Hussein | Senior Procurement Specialist | Senior Procurement Specialist | SARPS |
| Fernanda Ruiz Nunez | Economist | Economist | SASDT |
| Jose Ramon R. Pascual IV | Counsel | Counsel | LEGES |
| Md. Tafazzal Hossain | Program Assistant | Program Assistant | SASDO |
| Md. Akhtaruzzaman | E T Consultant | Social Development Specialist | SASDS |
| Debbie Wei Mullin | Junior Professional Associate | Junior Professional Associate | SASDT |

**Non Bank Staff**

| Name | Title | Office Phone | City |
|---|---|---|---|
| Joel Jean-Philippe Hamann | Consultant | | Washington |
| Shirin Jahangeer | Consultant, Gender Specialist | | Dhaka |

| | | | |
|---|---|---|---|
| Mohi Uz Zaman Quazi | Consultant, Infrastructure Development Specialist | | Dhaka |
| Aminur Rahman Chowdhuri | Consultant, Financial Management Specialist | | Dhaka |
| Teen Kari Barua | Consultant, Sociologist | | Dhaka |
| Ernst Huning | Institutional Specialist / Consultant | | Sidney |
| Asif Faiz | Operations Advisor / Consultant | | Washington |
| Serge P. Cartier van Dissel | Procurement/Consultant | | Kathmandu |

**Locations**

| Country | First Administrative Division | Location | Planned | Actual | Comments |
|---|---|---|---|---|---|
| | | | | | |

# I. STRATEGIC CONTEXT

## A. Country Context

1. Bangladesh, with a population of about 150 million and a land area of 147,570 square kilometers is amongst the most densely-populated countries in the world. The country is vulnerable to natural disasters and extremely sensitive to climate change impacts. However, the economy of Bangladesh has grown steadily during recent years due to macroeconomic stability, trade liberalization, improved private sector investment climate and financial sector reform. Further, poverty has also decreased in the recent years, keeping Bangladesh on track to meet the Millennium Development Goal of halving extreme poverty by 2015. Improved infrastructure, particularly roads, during the last decade, has deeply supported economic growth and poverty reduction. This strong performance is expected to continue if exports continue to grow, remittances continue to recover and infrastructure services and connectivity is improved.

2. Bangladesh, however, still needs to overcome large issues of weak governance, urban congestion and under-investment in basic rural infrastructure. Poverty reduction remains a major challenge as 35 percent of Bangladesh's population still lives in poverty. Despite growing urbanization, the agricultural based rural economy remains critical for growth and employment. Improved rural transport infrastructure therefore, is key to meeting challenges for rural connectivity and poverty reduction, where most of the poorest population (73 percent) live.

## B. Sectoral and Institutional Context

***Rural Transport Sector***

3. ***Rural transport infrastructure in Bangladesh consists of rural roads, and rural waterways***. The rural road network consists of 37,819 km of Upazila Roads (UZR), 44,752 km of Union Roads (UR) and 215,774 km of Village Roads[1]. About 24,000 km of rural waterways offer a very high degree of penetration in rural areas where 25.1 percent of the country's total population has access to water transport[2]. There are over 8,000 markets of different sizes throughout Bangladesh, 2,100 of which have been selected by the Planning Commission as priority Growth Center Markets (GCM). The responsibility of the management of the rural roads network is with the Local Government Engineering Department (LGED) under the Ministry of the Local Governments.

4. About 63 percent of Bangladesh's rural population remains without access to all-season roads[3] compared to 39 percent in Pakistan. Populations without all season access suffer from poor accessibility and road connectivity, higher vehicle operating costs and transport costs and

[1] **Upazila Roads**: Roads connecting District Headquarters with Growth Centres, one Growth Centre with another by a single main connection, or connecting a Growth Centre directly to the upper level national road system.
**Union Roads**: Roads connecting Union Headquarters Upazila Headquarters, Growth Centers or local markets.
[2] *Bangladesh- Revival of Inland Water Transport: Options and strategies*, World Bank, 2007.
[3] "All-season road" is a road that is motorable all year round by the prevailing means of rural transport (typically a pick-up or a truck which does not have four-wheel-drive).

face isolation during rainy seasons. Lack of maintenance of the rural transport network also further deteriorates connectivity and accessibility.

5. About 43 percent of paved rural roads and all unpaved roads are in poor condition. Since 1995, the Government of Bangladesh (GoB) with support of the World Bank, has implemented the Rural Roads and Market Improvement and Maintenance Projects (RRMIMP-I and II) and the Rural Transport Improvement Project-I (RTIP-I)[4]. The recently implemented RTIP-I (closed on 30 June 2012), with credit amount of US$210 million equivalent covered improvement of rural infrastructure in 21 districts comprising: (a) improvement of 1,100 km of Upazila roads; (b) improvement of 500 km of Union roads; (c) periodic maintenance of 1,500 km Upazila roads, (d) construction of 15,000 linear meters of drainage bridge/ culvert on Union roads; (e) improvement/ construction of 150 rural markets and 45 rural jetties; (d) technical assistance for project implementation. Yet the maintenance requirements continue to grow and, therefore, more emphasis is being placed on the maintenance of rural roads in the future. Almost 70,000 gaps (drainage), about one gap per kilometer, remain on the upazila and union road network; 670,000 meters of bridges and culverts remain to be built to allow, rural access to all-season roads.

6. The Second National Strategy for Accelerated Poverty Reduction[5] and the GoB's 6th Five-Year Plan (FY 2011-2015) emphasizes the development of rural roads linking growth centers, union parishad headquarters, upazila parishad headquarters and social service institutions. The National Strategy also emphasizes: (a) prioritizing pro-growth infrastructure, including growth centers and other rural markets with provision for women market sections, submersible roads and flood shelters; and (b) ensuring women's participation and prioritizing their needs, including increased involvement in road construction and maintenance in the proposed new projects.

7. ***Government budgetary policy for rural road maintenance is inadequate, and unsustainable.*** Although the rural road maintenance budget has steadily increased in the last ten years, backlogs continue to grow. This year, only about 23 percent of the maintenance requirements are being met. The Government drafted a maintenance policy expected to be presented to the Cabinet for approval this fiscal year. The Bank comments have been incorporated in the draft including the promotion of the performance-based maintenance contracts. Furthermore, the Bank has recommended that the policy be supplemented by a maintenance strategy for the next ten years (with different scenarios of backlog clearance and levels of service, including a business plan). The maintenance strategy will provide a foundation for the Planning Commission, Ministry of Planning, Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C) and Ministry of Finance to agree on how to provide sustainable and adequate maintenance funding.

8. ***The road safety situation in Bangladesh is serious and deteriorating.*** The most vulnerable road users – pedestrians, poor people and children -- suffer the most serious consequences of road crashes. Road crashes overall in the country claim about 4,000 lives a year

[4] SDR138 million, Cr. 3791-BD approved June 19, 2003 closed June 30, 2012. Satisfactory per the lastISR.
[5] *National Strategy for Accelerated Poverty Reduction II (NSAPR II), FY 2009-11*,Planning Commission, Government of the People's Republic of Bangladesh, December 2009.

according to police data (actual fatalities are estimated to be more than double this number). Bangladesh's accident data collection is weak with significant under-reporting, and focuses mainly on national highways. The annual socio-economic costs of this public health problem are estimated to be around two percent of GDP.[6] While no reliable data on accidents on rural roads is available, an estimated 7 to 15 percent of accidents occur on rural roads. While rural roads managed by LGED are not the riskiest in Bangladesh in terms of road safety, many safety concerns exist, such as instances of dangerous overtaking, overloading, mix of slow and fast moving traffic, and abundance of non-motorized vehicles with very poor night visibility (rickshaws). The Rural Transport Safety pilot implemented under RTIP-I introduced safety improvements on selected roads through a combination of technical measures, awareness and capacity building activities and local participation in the design and implementation of road safety programs.

***Inland Waterways***

9. ***A substantial portion (12.3 percent) of the rural population in Bangladesh has inland water transport as its only mode of transport***. Inland Water Transport (IWT) is important for the poor as it is cheaper than road or rail transport, more energy efficient and environmentally friendly. Furthermore, it provides access to very remote areas and offshore islands where there is neither road nor railway communication. An estimated 745,000 country boats ply the rivers in Bangladesh of which 464,000 are used for passengers and 261,000 for cargo. The country boat sector is also a major source of employment in rural areas, estimated to employ about 3.8 million workers. However, Inland waterways authority of Bangladesh can barely manage 6,000 km out of about 24,000 km of waterways. Unmaintained rural waterways have reduced navigability during the dry season, limiting access to markets and services. Rural water transport services are also poor and often unsafe due to large volumes of accidents. Vessels are often overloaded, and waterways do not offer navigational aids. They lack adequate on-board facilities, such as toilets, making long trips difficult for women.

***Growth Center Markets (GCM)***

10. Integrated development of markets and roads has been a cornerstone of the rural infrastructure development strategy. High population density, high productivity of land, and small-scale farming activities provide a favorable basis for intensive trading of goods and services from rural areas. GCMs are planned and designed in consultation with users and other local stakeholders, and are managed and operated by a market management committee. GCMs can be improved by providing dry paved areas above flood level, adequate drainage, sheds, selling areas, clean water supply and latrines. Women Market Sections in GCMs provide disadvantaged women with culturally appropriate income-generating opportunities.

[6] Final Report on Review of Road Safety Management Capacity in the republic of Bangladesh, February 2008.

11. ***Improvement in the livelihood of rural populations***. Impact assessment studies[7,8] of the recently completed rural improvement interventions in Bangladesh confirmed the benefits of rural road improvements, including reduction in transport costs, both passenger and freight fares; increase in women participation in labor markets; increase in access to markets and healthcare, particularly for women; and increase in rural economy diversification. In previous project areas, household expenses for transport alone decreased an average of 37 percent. Agricultural wages in villages along improved rural roads increased by 27 percent compared to non-project villages, fertilizer price decreased by five percent, aggregate crop index increased by four percent and agricultural output increased from 30 to 38 percent. The overall poverty effect of road improvement was significant with poverty falling by about one percent. Further, rehabilitation of Growth Center Markets (GCM) stimulated trade and economic activities by women. Hence, rural road development is critical for improving living conditions and poverty reduction in rural areas.

12. ***The Executing Agency responsible for rural transport infrastructure in Bangladesh is a better performing government agency poised however, for further capacity building.*** While the Roads and Highways Department (RHD) under the Ministry of Communication is responsible for developing and maintaining national, regional and Zila roads, the Local Government Engineering Department (LGED) under the Ministry of Local Government, Rural Development and Cooperatives is entirely responsible for upazila and union roads (rural roads). LGED is recognized by the GoB and development partners as a capable agency that can efficiently deliver projects. However, certain areas of LGED's operations and capacity must be further strengthened to meet the growing needs and to ensure road development and maintenance gaps are met.

13. ***An LGED and World Bank joint Operational Risk Assessment (ORA) in 2007-2008 assessed fiduciary and operational risks in LGED's project management.*** The study highlighted gaps in LGED's project management tools, systems and processes. It also noted weaknesses in LGED's planning, contract management and overall oversight of fiduciary activities, feedback from field to headquarters, and lack of monitoring. Although LGED's information and communication systems are relatively progressive for GoB, LGED can further improve systems of gathering and utilizing reliable information. LGED has prepared a Management Improvement Plan prioritizing realistic options to effectively minimize the major operational risks identified.

***<u>Sector Issues to be Addressed by the Proposed Project</u>***

14. ***The World Bank's previous engagement in the Rural Transport Sector has made a significant impact on the rural poor in Bangladesh.*** The Bank has been a major partner in the development of Bangladesh's rural infrastructure sector, having already funded three rural roads improvement projects which successfully achieved their development objectives and

[7] Guillossou, J-N., and Szkobel, M. 2011. "Assessing the Impact of Rural Road Improvement in Bangladesh". Draft Paper. World Bank: Washington, D.C.

[8] The Poverty Impact of Rural Roads: Evidence from Bangladesh. Bank Policy Research Working Paper 3875, April 2006.

implementation progress in the last decade[9]. The first two projects' objectives were to facilitate economic and community development in the targeted districts by improving rural mobility and access to social and economic services. The recently completed RTIP-I provides rural communities with improved access to social services, market centers and economic opportunity and to enhance the capacity of relevant government institutions to better manage rural transport infrastructure.

15. ***Maintenance of assets is a central problem of all rural road projects.*** To improve rural road sustainability, the proposed project seeks to shift emphasis from building new roads to rehabilitation and maintenance of the existing rural roads network. RTIP-II is thus intended to strengthen the maintenance culture within LGED, local contracting industry and employment opportunities of communities living along project roads. To this end, the Rural Roads Maintenance Policy had been drafted which commits the Government to increasing annual roads maintenance funding, introducing performance-based maintenance contracting to rehabilitate Upazila and Union roads to a maintainable level, building the capacity of local contractors and employing local labor along project roads. The Rural Roads Maintenance Policy draft has been submitted to the Cabinet and approval is expected by November 01, 2012. Based on the Policy, a detailed Business Plan will be developed for implementation.

16. ***Road safety success requires long-term sustained efforts, not piece-meal attempts***[10]. Based on the lessons learnt from international experience, RTIP-I successfully piloted rural transport safety activities in three districts, including initial transport safety assessments, community-level awareness, advocacy and educational campaigns, and capacity building. The proposed new project will continue this effort and scale up these activities to all 26 project districts, in addition to promoting the wider application of Road Safety Audits, piloting improved accident data collection and strengthening road safety capacity of the LGED.

17. ***Improvement of Navigability of the Inland Waterways.*** The proposed project will **s**upport restoration of navigability during the dry season of the existing rural waterways through maintenance dredging (two pilot rural waterways selected) thus making them navigable all-year round. It will allow a low cost access for the poor people and link the remote areas with the transport network which do not have land accessibility.

## C. Higher Level Objectives to which the Project Contributes

18. The proposed operation is fully aligned with the Country Assistance Strategy (CAS) for FY11-14. Accelerated growth is a strategic objective of the CAS, which the project contributes to by increasing poor people's access to assets and economic opportunities in rural areas and reducing their vulnerability to severe flooding and climate change impacts. The project specifically supports the CAS Results Framework outcomes such as 1) increased infrastructure

[9] Rural Roads and markets Improvement and Maintenance I (1988-1997) and II (1996-2003), RTIP-I (Cr. 3791, 2003-2012).

[10] Bliss, T. and Breen, J. 2009. "Implementing the Recommendations of the World Report on Road Traffic Injury Prevention. Country guidelines for the conduct o f road safety management capacity reviews and the related specification of lead agency reforms, investment strategies and safety projects". The World Bank Global Road Safety Facility, Washington, DC, page 21.

provision, access and efficiency; 2) increased share of population with access to all-season roads; 3) enhanced disaster preparedness; and 4) expanded participation in local development and women's economic empowerment.

## II. PROJECT DEVELOPMENT OBJECTIVE

### A. Project Development Objective (PDO)

19. To improve rural accessibility in project areas (covering 26 districts) and strengthen institutional capacity for sustainable rural road maintenance.

### B. Project Beneficiaries

20. Physical infrastructure improvements under RTIP-II are expected to reduce rural poverty and stimulate economic development of rural communities in the 26 districts project: 2 west and 24 east of the Jamuna river, excluding the Chittagong Hill Tracts (which are covered by an Asian Development Bank-funded project). The choice of the districts was made in coordination with other development partners to avoid geographical overlap of projects. The project is expected to have approximately 22 million beneficiaries. The project will generate substantial direct short and longer-term employment for the poor, including disadvantaged women and other vulnerable groups.

### C. PDO Level Results Indicators

21. The following indicators are proposed to evaluate achievement of the PDO. A more detailed list of project indicators and their respective baseline and annual target values can be found in Annex 1:

- Population living within two km of all-season roads in 26 project districts, which is an IDA rural accessibility indicator (core indicator);
- Percentage of roads in good condition in 26 project districts;
- Increase in the level of road user and community satisfaction in the influence area; and
- Maintenance funding needs are increasingly met in the project districts;

## III. PROJECT DESCRIPTION

### A. Project Components

22. The project rationale is to scale up the accomplishments in the rural roads infrastructure under the ongoing RTIP-I and to further expand on it by adding improvements in the inland water transportation and introducing performance based (routine and periodic) maintenance contracts of the rural roads. Therefore, RTIP-II consists of the following components andmore information on these components can also be found in Annex 2.

**Component A: Accessibility Improvement (US$338.1 million):**

23. ***Sub Component A1: Rural Roads Improvement (US$145.8 million):*** The project will finance improvement of about 750 km of Upazila roads and about 500 km of Union roads in 26 districts through upgrading earthen to paved roads standard. Appropriate road safety measures will be included in the civil works. The sub-component will include land acquisition (only for Upazila roads) and compensation of persons affected by the project, environmental mitigation measures, road safety and activities by women's groups. All required land acquisition and resettlement costs will be funded by the GoB counterpart funding.

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24. ***Sub Component A2: Rural Road Rehabilitation and Maintenance[11] (US$167 million)***: The project will finance rehabilitation and periodic maintenance of about 3,550 km of Upazila and Union roads in 26 districts. Rehabilitation works will include appropriate road safety measures. The project will also maintain about 450 km of roads for five years following the DANIDA model of Performance Based Maintenance Contracts (PBMC). RTIP-I roads will be given preference for PBMC to enhance sustainability of RTIP-I investments. Bank will regularly monitor increases in GoB's maintenance funding.

25. ***Sub Component A3: Rural Waterways and Ghats (US$3.1 million):*** The project will include a pilot IWT sub-component on low impact dredging of two rural waterways using local technology. In addition, the project will finance construction of river infrastructure (ghats, jetties) at about 20 locations. The two rivers at Comilla and Tangail have been selected. Candidate ghats have been identified following a methodology agreed with the Bank.

26. ***Sub Component A4: Growth Center Markets (GCMs) (US$5.2 million):*** The project will support the improvement and development of 50 markets, selected by a jointly-determined selection methodology and in consultation with the beneficiaries. Five shops will be reserved for women traders in Women's Marketing Sections (WMS) of each market. Due consideration was paid in the selection process for women to operate shops in WMS and enhancing their capacity.

27. ***Sub Component A5: Project Supervision and monitoring consultants (US$17.0 million)***: The subcomponent will include services of three consulting firms, two Design and Supervision Consultants (DSC), and one Management Support Consultant (MSC). The MSC will provide managerial support to PMU, LGED and assist to oversee the function and performance of the two DSCs. The two DSCs will be responsible for field-level supervision and implementation of project works in 13 districts each.

28. **Component B: Institutional Strengthening, Capacity Building and Governance Enhancement (US$11.9 million)**: The institutional strengthening aspect builds on and further improves the functioning of the LGED through (i) capacity building to enhance LGED performance, governance and accountability; and (ii) performance monitoring and training.

29. ***Sub Component B1: Institutional Development and Governance (US$8.9 million)***: The sub-component will support implementation of the new post-ORA LGED Management

[11] Road Rehabilitation and Maintenance includes construction activities like (i) overlay, (ii) shoulder repairing, (iii) pot hole filling, (iv)dense carpeting and (v) seal coating within carriageway and shoulders on both sides. No earth work on embankment or slope repair is included in RPM.

Improvement Plan aimed at strategic enhancements in LGED's capacity, effectiveness, governance and accountability over the 2012-2016 timeframe in the following areas: Maintenance Management (Policy, Planning and Operations); Planning, Design and Quality Management (including ISO certification); Environmental and Social (Impact) Management; Performance Management including Monitoring and Evaluation; IT-ICT-MIS Technology, Facilities and Capacity Building; and Training and Human Resource Development capacity. These interventions are directly aligned with the project's Governance and Accountability Action Plan (GAAP) targets.

30. ***Sub Component B2: Project Implementation (US$3.0 million):*** LGED's capacity will be strengthened in project performance monitoring and management to regularly gather information for assessing the project's effectiveness in meeting the agreed PDO. The support will include services for performance audits and socio-economic and monitoring surveys.

**Component C: Rural Transport Safety (US$3.5 million)**:

The Component will include:

31. **Technical assistance support for integrating road safety engineering measures and awareness building to ensure improved safety along project roads**. This will include road safety audits of the designs, improving safety during civil works and public awareness and education, including training (basic and 'train-the-trainer' levels) for representatives of participating Local Government (LG) entities and communities, police, school teachers, members of the (rural) rickshaw drivers' associations, other local road transport operators and local-level works contractors and associated advocacy, monitoring and survey activities in the concerned project districts. Costs associated with integration of road safety engineering solutions such as signs, markings, street lights, pedestrian facilities, etc. will be included as part of civil works under the first component of the project.

32. **Technical assistance for strengthening road safety capacity of the LGED**. This will include expert support to the recently established Central Road Safety Unit (CRSU), development of road safety related guidelines and manuals, revision of appropriate design standards, codes, and practices in road safety engineering, improvement of rural road accident data collection process, database and capacity analysis through piloting local accident data collection at Upazila and Union levels in eight districts, and development of a comprehensive Road Safety Training Program for LGED including rural road safety engineering, road safety auditing, monitoring and evaluation, and safety during road works

**Component D: Contingent Emergency Response Component (US$0)**

33. Should an adverse natural disaster event occur that causes a major calamity, the GoB may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the GoB to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

## B. Project Financing

### 1. Lending Instrument

34. The Bank's investment lending instrument selected for the proposed project consists of a Specific Investment Loan (SIL). LGED has substantial experience with the Bank's financial management, disbursement procedures and financial reporting requirements. LGED will have an effective accounting system in place for project financial management (FM) requirements at project effectiveness. By project mid-term, LGED will develop a well-advanced comprehensive LGED-wide transaction based FMS. Additional details, including project FM arrangements, are in Annex 3.

### 2. Project Cost and Financing

35. Total project costs are estimated at US$417 million (about Takas 3,500 crores). The Bank's projected contribution is US$302 million. Detailed costs estimates in US dollars are provided in the table below. Annex 2 contains a detailed cost table.

**Table 1: Proposed Project Cost Summary for RTIP-II**

| Component | Indicative Costs (US$M) | % of Total | GoB (US$M) gob | WB (US$M) rpa | % of WB's Share |
|---|---|---|---|---|---|
| **Component A: Accessibility Improvement** | 338.1 | 81% | 83.9 | 254.2 | 75% |
| **Component B: Institutional Strengthening, Capacity Building and Governance Enhancement** | 11.9 | 3% | 0.8 | 10.6 | 90% |
| **Component C: Road Safety** | 3.5 | 0% | 0.2 | 3.2 | 90% |
| **Component D: Contingent Emergency Response Component** | 0 | 0% | 0.0 | 0.0 | 0% |
| *Physical Contingency (10%)* | 32.1 | 8% | 8.2 | 23.9 | 74% |
| *Price Contingency (4%)* | 12.8 | 3% | 3.3 | 9.6 | 74% |
| **Sub-Total** | **398.4** | **96%** | **96.5** | **302.0** | **76%** |
| Other GoB Overhead Costs | 18.7 | 4% | 18.7 | 0.0 | 0% |
| **Grand Total** | **417.1** | **100%** | **115.1** | **302.0** | **72%** |

## C. Program Objective and Phases (If Applicable):

Not applicable.

## D. Lessons Learned Under RTIP-I

36. The project design has benefited from implementation of the recently completed RTIP-I, as well as other Bank-funded rural road projects completed in recent years. LGED has attained extensive experience through implementing three Bank-funded projects, and has capacity to implement the proposed project. The main lessons learnt and incorporated in the proposed project design are described below and in Annex 11:

- ***Project Supervision.*** Effective supervision of large and dispersed rural road improvement and maintenance contracts was challenging for LGED's existing capacity. LGED's staffing

should be further strengthened, and additional management supervision support should be provided. RTIP-II's implementation arrangements have incorporated these lessons learned.

- ***Land Acquisition and Resettlement (LAR) aspects***. The implementation of the Upazila roads were delayed due to the resolution of the LAR actions but the road sections which did not involve any LAR actions, were implemented as planned. The land acquisition is therefore minimized in the proposed project (limited to Upazila roads under improvement component only, where required), all actions including compensation to the affected persons will be completed prior to awarding civil work contracts (covenanted).
- ***Price Escalation Provision***. RTIP-I civil works contracts did not include the price escalation clause (construction period was less than 18 months). However, construction material prices did rise during the implementation period. Many contractors were forced to abandon the works and about 70 contracts were cancelled and then re-awarded. The civil work contracts under the proposed project will include such a provision as required.
- ***Procurement of ICB vis-a-vis NCB Contracts.*** Four ICB contracts were awarded on a pilot basis each with four to five non-contiguous roads. Large geographic distribution of roads caused implementation delays and quality control issues. Two of the four contracts were cancelled and re-awarded. Therefore no ICB contracts will be proposed for RTIP-II.

## IV. IMPLEMENTATION

### A. Institutional and Implementation Arrangements

37. The Local Government Engineering Department (LGED) under the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD&C) will be responsible for the overall execution and implementation of the project. LGED has extensive experience implementing donor-funded projects including by the World Bank. LGED established a Project Monitoring Unit (PMU), which will be headed by a Project Director and one headquarters-based Deputy Project Director (DPD) associated staff (re: LGED Organogram in Annex 3), that will be primarily responsible for carrying out day-to-day project implementation. Additionally, two Deputy Project Directors will be based in the field for additional management and oversight support. A Management Support Consultant (MSC) and two Design and Supervision Consultants (DSCs) will provide direct support the PMU to monitor and evaluate the project implementation. Each DSC will cover 13 of the 26 project districts. The two DSCs will be responsible to prepare programs (RPM, PBMC) beyond the first year program.

38. LGED's decentralized units in the districts headed by the Executive Engineers and staff will be responsible for implementation activities on the ground. Respective DSCs will work in coordination with the Executive Engineer to supervise the Project implementation with support from experts in technical, social, environmental, procurement and financial management matters.

39. A high-level empowered ***Project Steering Committee (PSC)*** will be established to provide oversight and undertake periodic review of project implementation and addres the issues hampering the progress. Project Steering Committee, which shall be chaired by the Secretary, Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, and include as members, the Director General, Local Government Division, the Chief Engineer and Additional Chief Engineer (Planning) of LGED, and representatives of the

Agriculture, Water Resources and Rural Institutions Division; IMED; Finance Division, Economic Relations Division; and the Ministry of Land. Aditionally, a Project Coordinator, having the rank of Superintending Engineer, under the Chief Engineer, LGED, will be responsible for the oversight coordination and supervision of Project activities.

40. ***Financial Monitoring***. The PMU will have a financial management section headed by a Financial Management Specialist (FMS). The FM specialist will report to the Project Director and be assisted by adequate number of Accounts Officer(s), Accountant(s) and other support staff.

41. ***Procurement Arrangements***. Information on the procurement guidelines, planning, particular methods of goods, works, consultancy, non-consultancy services, prior/ post review requirements are included in the Procurement Plan, which will be updated at least semi-annually, as mentioned in the Procurement section below.

42. ***Environmental and Social Safeguards (including Gender and Grievance Mechanism)***. An environmental management and social impact management framework have been adopted since the design and selection of the project components beyond first year program will be undertaken during the implementation. Specific environmental assessment and mitigation, resettlement action plans will be prepared and implemented. The detailed arrangements including gender mainstreaming and grievance redressal mechanisms are described in the subsequent respective sections below.

43. The ***Project Environmental Unit*** headed by an Executive Engineer, established under RTIP-I, will continue to coordinate the environmental management of the project. Two additional Junior Environmental Specialists will be hired through the DSC, and one additional Senior Environmental Specialist through the MSC for environment screening/assessment, supervision and monitoring. In addition, the integrated performance audit as well as the Bank's regular implementation support missions will cover environmental aspects of the project and compliance with EMF/EMPs as well as World Bank safeguard policies.

44. The ***Borrower's Project Implementation Plan (BPIP)*** will guide LGED, Consultants and Contractors in carrying out their responsibilities during implementation. The BPIP will serve as a living document routinely updated to accommodate ongoing implementation arrangement changes. Additional details on LGED's implementation arrangements, management structure, and organizational structure of LGED are outlined in Annex 3.

45. LGED will submit quarterly reports in an appropriate format to the GoB and the Bank no later than 15 days after the end of each quarter. The PD/PMU, together with the MSC, will be responsible for preparation of the quarterly report on overall progress, major issues, expected completion dates for civil works, progress on institutional components, implementation of SIMF and EMF, training, road safety, M&E, procurement, and financial management issues. The report will include: (1) comparison of actual physical outputs and disbursement with updated forecasts; (2) financial statements; (3) procurement report showing status and contract commitments. Additionally, brief monthly reports will be submitted by the MSC describing the ongoing activities and urgent issues requiring immediate attention (format to be provided in the BPIP).

46. To monitor project progress, two full implementation support missions will be fielded annually by the Bank. Additionally, an Integrated Performance Audit will be undertaken, and a mid-term review of the project will be carried out by about November 2015. An Implementation Completion and Results Report (ICR) will be submitted to the Bank no later than six months after the closing date. Additional detail on the World Bank's support to project implementation and monitoring can be found in Annex 5.

## B. Results Monitoring and Evaluation

47. The results monitoring and evaluation framework will consist of four main activities:

(a) Results framework as presented in Annex 1, to measure achievement of the Project Development Objective.
(b) Annual district performance monitoring to assess project districts' implementation based on key indicators and agreed targets. This will provide districts with a performance incentive mechanism as well as an assistance tool to help poorer performers address major issues. Project funds would be reallocated to other districts in cases of continuous poor performance.
(c) Integrated performance audit to review all aspects of project implementation performance, including engineering, environmental and social safeguards, rural transport safety and institutional components.
(d) An Impact Evaluation (IE) will be designed to measure significant causal project impact on income, employment, access to social services and socio-economic welfare of the beneficiaries. Results will be disaggregated by gender to measure the impact on female beneficiaries. A baseline survey will be carried out at project start with a follow-up survey at project completion. The study will implement a difference-in-difference approach for comparison between treatment (project beneficiaries) and control (non-beneficiaries) groups.

## C. Sustainability

48. The Bank's Transport Business Strategy[12] defines sustainability in transport systems as having financial, economic, operational, institutional, environmental and social dimensions. The project is economically viable as the accumulated discounted benefits exceed costs. However, sustainability of economic benefits requires good quality of construction works and adequate maintenance to prevent premature failure of roads.

49. Operational sustainability will be achieved by the road maintenance policy, strong institutions, effective planning and management systems, and innovative construction and maintenance works. The project will enhance LGED's planning and management processes, skills and resources. The new Maintenance Policy will provide a strong framework for such enhancements and for re-balancing of budget allocations for maintenance needs, which will increase at least 20 percent each year until funding gaps between maintenance needs and

[12] World Bank. "Transport Business Strategy for 2008-2012: Safe, Clean and Affordable Transport for Development." 2008. Washington, D.C.

financing comes down to no more than 25 percent. The Bank will monitor GoB rural road maintenance budget allocations as illustrated in Annex 1.

50. Institutional sustainability will be achieved by (i) adopting a more devolved and dynamic 'action learning' approach in LGED capacity building measures; (ii) where possible, 'embedding' required external expertise directly among the staff (and where applicable, ongoing Working Groups) for more effective knowledge/skills transfer and 'mainstreaming' of enhanced competencies and processes; (iii) preparation of specialist training modules / courses from all TA providers for ongoing delivery to LGED staff; (iv) minimizing off-site production of external assistance outputs; and (v) keeping capacity building services to short-to-medium-term intervals, to avoid organizational dependency on long-running 'in-house' TA / consultancies; and (vi) revising / upgrading the main LGED technical and operational policies and standards directly in parallel with the TA-supported capacity-building and training measures. Unlike the PMU-centered approach followed under RTIP-I, these arrangements will emphasize LGED's responsibility for the effectiveness of project results and outcomes.

51. ***Environmental and social sustainability***: All subprojects will require environmental screening, sub-projects with significant impacts will require further impact assessment and mitigation plans. The Environmental Management Plan (EMP) will be part of the bidding document and LGED will put a fixed budget for implementation of the EMP to ensure contractors are equally aware of the EMP. Implementation of the EMP will be monitored by LGED and the consultants and progress will be reflected in quarterly and annual reports on environmental management. In continuation of RTIP-I, RTIP-II will further build the capacity of LGED officials on environmental management. In addition, the Environmental Management Unit (EMU) will be strengthened to integrate environmental management in LGED projects and programs. Social sustainability will be assured by building stakeholder ownership through enhanced participation of project affected persons (PAPs) and road users in project design, implementation, monitoring and evaluation. The Suggestion and Complaint Mechanism will allow stakeholders to address grievances, a key contributor to project sustainability.

## V. KEY RISKS AND MITIGATION MEASURES

### A. Table 2: Risk Ratings Summary Table

| Risk[13] | Rating |
|---|---|
| Project Risk | |
| - Design | **M** |
| - Social and Environmental | **S** |
| - Program and Donor | **M** |
| - Delivery Monitoring and Sustainability | **H** |

| Risk | Rating |
|---|---|
| Stakeholder Risk | **S** |
| Implementing Agency Risk | |
| - Capacity | **S** |
| - Governance | **S** |
| **Overall Implementation Risk** | **S** |

### B. Overall Risk Rating Explanation

52. The overall risk rating of the proposed project is substantial. The key risks to achieving the project development objective fall under two main categories: project specific risks, and risks in overall weak governance in the country and in the sector. The former category includes such

[13] Risk scale uses the following ratings: Low (L) - Moderate (M) - Substantial (S) – High (H).

risks as insufficient capacity of LGED to manage project implementation in 26 districts, poor quality of engineering design execution of the civil works, delays and cost overruns caused by weak capacity of the implementation agencies in procuring and managing contracts and overseeing their execution; unmitigated environmental and social impacts due to weak management capacity; and aggravation of road accidents. The later category of risks relate to the overall weak governance in the country and in the sector, including inefficient allocation and use of resources in rural road maintenance and asset management and weak internal accountability and integrity mechanisms and insufficient citizen oversight. The detailed risk assessment is presented in Annex 4. A Governance and Accountability Action Plan for the project is included in Annex 6.

## VI. APPRAISAL SUMMARY

### A. Economic Analyses

53. A cost-benefit analysis has been carried out for each of the main investments components of the project: (i) Improvement of Upazila and Union Roads; (ii) rehabilitation and periodic maintenance (including PBMC), (iii) GCM improvement; and (iv)Rural Waterways improvement. The roads, GCMs, and ghats (river jetties) were selected based on an agreed set of socio-economic criteria and the selection methodology (described in Annex 7), including physical and social (poverty, population and needs) considerations, aims to maximize the impact on rural accessibility.

54. The economic analysis of the roads component was thus carried out for both the road improvement and the RPM component. Similarly, the economic analysis for the GMCs and ghats was carried out jointly as these investments are highly complementary. The economic analysis for the rural waterways improvement component was carried out for the improvement of the selected Turag River extension. The table below presents the economic analysis summary of all components.

55. Conclusion. The results from the economic analysis confirmed the justification of the selected investments. The results from the sensitivity analysis show that these results are reasonably robust even given reductions in benefits and increases in cost. Therefore, it can be concluded that economic viability from the investments is feasible with a weighted average EIRR of 62 percent. Detailed economic analysis can be found in Annex 8.

**Table 3: Economic Analysis Summary**

| | | | | | | Sensitivity Tests (Switching values) | |
|---|---|---|---|---|---|---|---|
| **Component** | **Financial Component Cost (US$ Million)** | **Total Length (km)** | **EIRR** | **NPV (US$ Million)** | **NPV per unit financial cost** | **Cost Increase** | **Benefits Decrease** |
| UZR Improvement | 108.8 | 734 | 41% | 348 | 3 | 118% | 54% |
| UNR Improvement | 37.0 | 497 | 84% | 295 | 12 | 168% | 65% |
| Rehabilitation and Periodic Maintenance (RPM) | 153.0 | 979 | 64% | 199 | 6 | 146% | 60% |
| PBMC | 14.0 | 167 | 40% | 8 | 1.4 | 136% | 42% |
| RWT | 1.5 | 20 | 15.4% | 0.07 | 0.3 | 45.00% | 20% |
| GCMs and ghats | 6.8 | 50 GMCs | 292% | 946 | 25 | 1582.07% | 82.64% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Imrprovement | | | | | | | |
| **Total/weighted average** | **321.1** | | **62%** | **1,796** | **5.8** | **169%** | **58%** |

*Note: EIRR, NPV, NPV per unit of financial cost and switching values for increased cost and decreased benefits are weighted by number of km expect for GCMs that is computed as a simple average. The last row presents average figures weighted by financial cost.*

## B. Technical

56. The project builds on the civil works components implemented under RTIP-I. Furthermore, two components, dredging of rural waterways and performance based maintenance contracts, were added for a holistic network connectivity approach and a strategic shift towards maintenance. The typical design and specification documents and cost analysis reports have been prepared for all civil work project components and are available as background documents. It will provide the standards that will be followed while preparing bill of quantities and bid documents. The basis for the average unit capital costs for the project were based on the recent biddings and contract rates for LGED projects implemented and inflated to mid-2012 values. The unit cost estimates are summarized below were used in the project cost table at in Table 2.1, Annex 2. The key technical aspects of the physical civil work components are described below, with additional detail included under Annex 9.

**Table 4: Unit Cost Estimates, February 2012**
**LGED- Consolidated Feasibility Study Report Document**

| Category of Sub-project | Unit | Unit Cost Tk. Lakh | Unit Cost (US $) 80 TK= 1USD |
|---|---|---|---|
| Improvement of UZR including cross-drainage and safety | km | 116 | 0.145 |
| Improvement of UNR including cross-drainage and safety | km | 59.25 | 0.074 |
| Rehabilitation and Periodic Maintenance of UZR | km | 34.5 | 0.043 |
| Performance-based Maintenance Contracting (five-year contracts) | km | 25 | 0.031 |
| Improvement of Growth Centre Markets | No. | 75 | 0.094 |
| Improvement of ghats | No. | 65 | 0.081 |
| Improvement of two rural water routes | km | 26.8 | 0.034 |

57. **Improvement of UZRs (Upazila roads- 750 km) and UNRs (Union roads- 500km)**.The UZRs and UNRs are critical for linking rural areas to economic opportunities, social and administrative services, and road networks managed by the Roads and Highways Department (RHD). RTIP-II proposes that all UZR selected for upgrading will be improved by LGED's standards set out in the 2005 Rural Road Design Manual. All UZRs will be constructed with the embankment crest at least 60 cm above the 10-year return flood level. Land acquisition and resettlements are expected only for Upazila roads improvement and not for Union roads.

58. The Bank team reviewed the standard designs, drawings and specifications and found them appropriate. The scope of work will involve raising and widening of road embankment to standard with 7.3 m for UZR (typical) and 5.5 m for Union Road; the pavement width for UZR is 3.7 m and 3.06 m for Union Roads with hard shoulder of 1.25 m width (may vary with the type depending on the traffic). Embankment side slopes are 1:1.5 (vertical: horizontal). The maximum size of bridge for the road improvement will be 30 m; larger bridges will require a separate bridge contract. Each road contract will also incorporate road safety mitigation measures (based on detail road safety audit). In the second year about 125 km of roads will be

improved and so on the remaining roads work will be done in the final three years of the project period.

59. **Rehabilitation/Maintenance of UZRs and UNRs (RPM).** This component will rehabilitate and carry out periodic maintenance of 3,550 km of district roads. To improve connectivity however, a maximum of two small culverts per road can be included in specific cases. Phase I (first year) roads for RPM (about 900 km) and PBMC (120 km) have been identified. The detailed design will be undertaken by the design and supervision consultants. This will not involve upgrading roads in terms of crest width, pavement width or embankment cross-section, and therefore will not require any land acquisition. Roads will only be brought to 'original' conditions, and into sustainable and safe condition (following a sustained maintenance regime) to provide safe passage of vehicles within designed traffic capacity parameters. The Bank team reviewed the standard design and specifications and found them appropriate.

60. **Performance Based Maintenance Contracts.** A pilot component for routine and periodic maintenance of about 450 km in ten selected districts will be undertaken by employing the performance based maintenance contract (PMBC). It will include road repair works and routine and emergency maintenance carried out by the local contractors. This modality is output rather than input based and will provide significant employment and income earning opportunities to the locals, including women. About 120 km have been selected for the first year program, with the remaining 300 km implemented in the subsequent two years. Therefore, the five year long contracts which will start in the 3rd year will be continued two years beyond the period of the project. LGED has confirmed to fund remaining two years of these contracts from GoB maintenance budget. Additional details on PBMC are provided in the Annex 10.

61. **Improvement of Growth Center Markets (GCMs)**. The improvement/ construction of 50 GCMs will generally follow the RTIP-I designs (concrete structure with tin shed roofing). LGED has prepared a manual providing design guidelines for user participation. Each design will be site specific and prepared by the respective Design and Supervision Consultants. However, the standard design and specifications documents prepared (reference paragraph 56) will be followed for design and bidding purposes.

62. **Improvement of Ghats (river jetties):** 20 river jetties (concrete landing stations) will be improved based on RTIP-I designs. Of these, ten have been included along the two rivers selected for pilot rural waterways dredging and improvement component. Loading and unloading river bank facilities will include: platforms, floating walkways and protective walls with steps. Detailed designs will follow standard specification documents prepared (paragraph 56).

63. **Dredging of Rural Waterways**. The project will pilot low-impact dredging at two rural waterways using local technology, removal of obstructions (earthen bunds) and installation of navigational aides. The channels of rural waterway should be suitable for navigation by rural crafts, mainly traditional country boats and engine boats. Preparation for one river, including a hydrographic survey, has been completed and will be undertaken first. Rural waterway channels will be from the unclassified rivers category but suitable for navigation by rural crafts.

64. LGED has adequate government support to intervene in the improvement of rural waterways. The GoB's Sixth Five-Year Plan (FY2011-FY2015) states that no one has or accepts the responsibility for maintaining 18000 km (out of 24,000 km) of these smaller rural waterways. Hence the Master Plan of the Bangladesh Inland Water Transport Authority (BIWTA) recommends that the tasks should be carried out by LGED with active participation of the Local Government Institutions (LGIs). LGED already has a Memorandum of understanding with the Bangladesh Water Development Board (BWDB) covering LGED activities on ghats and jetties. LGED has over 15 years of experience in improving rural water transport through the construction of improved landing/ unloading facilities (ghats or river jetties) for rural passengers and cargo boats. A detailed risk mitigation table for the rural waterways sub-component has been included in Annex 12.

## C. Financial Management

65. A financial management (FM) assessment was carried out to evaluate the overall financial management environment prevailing in the country and within LGED. More specifically, the Bank assessed the financial management risks underlying the project, the capacity of the implementing entity (LGED), and the FM systems in place. The assessment also identified the financial management arrangements under the proposed project that would need to be in place to meet the Bank's fiduciary requirements in accordance with its OP/BP 10.02. Lessons learned during the implementation of RTIP-I were also considered during the assessment. The project financial management arrangements (Annex 3) for RTIP-II are considered to be satisfactory based on the FM assessment, the analysis of the risks identified and the risk mitigation measures outlined.

66. LGED has substantial experience with the Bank's financial management, disbursement procedures, and financial reporting requirements. LGED will have adequate financial management capacity and an effective system in place along with a computerized accounting system for project FM requirements at project effectiveness. By project mid-term, LGED will develop a well-advanced comprehensive LGED-wide transaction based FMS. Additional details, including project FM arrangements, are in Annex 3.

67. While LGED's response to audit issues was previously slow, substantial progress was recently made to addressing theoutstanding issues. All audit objections have been satisfactorally resolved through recovery of unduly outstanding mobilization advances, recovery of penalties for failure to deliver the works, recovery of excavated earth value and provision of clarifications and further documentation. LGED has also agreed to address all audit issues that might be raised by the auditors on the financial statements for final project year (FY 2012) within three months from the receipt of the audit report.

68. **Supervision Plan**: Given the project's "substantial" overall risk rating, full supervision mission will be conducted at least every six months to ensure adequate project financial management arrangements are maintained at the PMU and the district level. Regular reviews will be carried out to ensure project expenditures remain eligible for World Bank funding, IFRs are timely submitted, the computerized accounting system is continually in operation and the Project Audit Committee is fully functional.

## D. Procurement

69. **Advanced procurement actions**: Two types of procurement are subject to advance actions so that contracts can be awarded within a short time of credit effectiveness of the project. The three consultancy assignments (Supervision Consultants R1 and R2 as well as Management Support Consultant- MSC) and first year civil works contracts (RPM and PBMCs) as agreed in the initial procurement plan of RTIP-II, are earmarked as advance procurement actions.

70. **Institutional and management capacity constraints remain for procurement.** Key findings of the procurement capacity assessment include: (i) quality of procurement documentation to be improved, (ii) appropriate planning and procurement packaging, (iii) utilization of the delegated financial powers in case of high bid price or re-bidding, (iv) handling procurement complaints in the earlier stages of RTIP-II to be improved, and (v) avoiding delays in contract implementation. Based on procurement performance of LGED under RTIP-I, the procurement operation and contract administration risk is rated as "Substantial". Annex 3 contains detailed procurement information.

71. **Procurement Plan**: The procurement plan dated March 8, 2012 for the first 18 months of the project has been prepared by LGED. The procurement plan will be updated once every six months and will be the basis of Bank's procurement supervision plan.

## E. Social Safeguards

72. A framework approach for the project planning was considered, hence the specific investment activities will be identified and designed only during the course of the project implementation. A Social Impact Management Framework (SIMF) has, therefore been developed during the preparation stage for social safeguard compliance of the project. The World Bank policies on involuntary resettlement (OP/BP 4.12) and indigenous people (OP/BP 4.10) have been triggered for this project. The SIMF includes a resettlement policy framework, an indigenous peoples planning framework and a gender framework. Social Impact Assessment (SIA) will be conducted for all project activities and Social Management Plans (SMP) that include Resettlement Plans (RP), Indigenous Peoples Plans (IPP) and Gender Action Plans (GAP), will be prepared as necessary.

73. Adverse social impacts expected under RTIP-II program are largely related to possible land acquisition and population displacement for improvement of UZR, and the presence of indigenous communities in project districts who are also among the targeted beneficiaries. Specific social screening and planning of the project activities will be carried out as part of the annual investment planning process in line with the SIMF during implementation. The first year works are rehabilitation and periodic maintenance (RPM) of UZR and UNR which have been designed to be carried out without any land acquisition. According to the social screening carried out in February 2012, no land acquisition or resettlement is expected under RPM works and improvement of UNR.

74. LGED will follow the Gender Strategy adopted for gender mainstreaming in RTIP-II. The employment program for rural women in off pavement routine maintenance will continue in RTIP-II. The PBMC component of RTIP-II will implement training programs for rural women for employment for income earning opportunities.

75. LGED has designed a Suggestions and Complaints Mechanism (SCM) for grievance redress under RTIP-II. A Suggestion and Complaint Committee (SCC) at district level will be set up for receiving and settlement of complaints and suggestions from local communities on procurement, contract management, corruption and fraud, financial management, social, environmental, health safety. A Grievance Redress Committee (GRC) at the Upazila level will be set up to ensure accessibility by the affected persons for resolving land acquisition and resettlement related grievances. Where indigenous peoples (IP) are among the affected persons, the membership composition of the GRCs will take into account any traditional conflict resolution arrangements that IP communities may practice.

76. The SIMF was prepared through a consultative process including local level workshop and meetings conducted in November 2011. The draft SIMF was uploaded in the LGED website on 22nd. December 2011 and disclosed in the World Bank Infoshop on 24 December 2011. LGED presented the draft for comments in a national workshop held on 7 February 2012. The updated SIMF has been uploaded in the LGED website on 29 February 2012 including comments from the national workshop.

## F. Environment (including Safeguards)

77. The project is classified as a Category A project due to the complexity of environmental issues associated with rural waterways improvement component IWT and the uncertainty (lack of details at project preparation) on the project impact to such a widespread geographical project area. The policies on environment assessment (OP/BP 4.01), natural habitats (OP/BP 4.04), and physical cultural resources (OP/BP 4.11), have been triggered for the proposed operation.

78. A framework approach has been adopted since sub-components will be identified during project implementation. LGED has prepared an Environmental Management Framework (EMF) on the procedures for environmental screening/assessment, environmental management plan preparation and implementation, environmental monitoring etc. In addition to the EMF, the relevant Environmental, Health and Safety Guidelines of the World Bank Group will be applicable to the project. The draft EMF along with Bangla version has been disclosed on the LGED website (http://www.lged.gov.bd/LibraryReports.aspx?digitalLibraryType=7) since December 22, 2011 for public comments. Hard copies of the document have also been made available in LGED Project Office and districts offices. The draft EMF has been disclosed in World Bank Infoshop on December 24, 2011. The EMF was prepared through a consultative process and presented and discussed in a national consultation workshop held in early February, 2012. The updated EMF including the comments from national workshop has been uploaded in the LGED website on February 29, 2012. The subproject specific environmental screening/assessment will also be disclosed before contract mobilization.

79. LGED has previous experience in implementing environmental management framework and has developed reasonable institutional capacity which will be further strengthened. The Project Environmental Unit headed by an Executive Engineer, which was set-up under RTIP-I, will continue to coordinate the environmental management of the project. The project will also hire the services of two Junior Environmental Specialists through Design and Supervision Consultancy and one Senior Environmental Specialist through Management Support Consultancy for environment screening/assessment, supervision and monitoring. The EIA of the rural waterways will be conducted by qualified individual environmental consultant. In addition, the integrated performance audit will cover environmental aspects of the project and in compliance with EMF/EMPs as well as World Bank safeguard policies.

80. Only the maintenance works of roads which have limited and localized environmental impact are included in year one work program after environmental screening (full environmental assessment will not be required) and appropriate mitigation plan. Other components will be implemented from the second year after completion of proper environmental screening/assessment. Construction contracts will include appropriate environmental mitigation measures, satisfactory to the World Bank.

## G. Other Safeguards Policies Triggered (not required)

81. The OP/BP 7.50 for International waterways notification requirements were to be triggered. However, an exception allowed under the policy has been obtained and affected.

## Annex 1: Results and Monitoring Framework
## Bangladesh: Second Rural Transport Improvement Project (P123828)
## RESULTS FRAMEWORK

**Project Development Objective**

PDO Statement

To improve rural accessibility in project areas (covering 26 districts) and strengthen institutional capacity for sustainable rural road maintenance.

**Project Development Objective Indicators**

| Indicator Name | Core | Unit of Measure | Baseline | Cumulative Target Values | | | | | Frequency | Data Source/ Methodology | Responsibility for Data Collection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | YR1 | YR2 | YR3 | YR4 | End Target | | | |
| Population living within 2 km of all season roads in 26 project districts | ☐ | Percentage | 56.4% | | | 61% | | 64% | Baseline, mid term and at the end of the project | GIS in LGED | LGED |
| Increase in roads in good condition (IRI below 7) in 26 project districts (19,678 km of paved roads) | ☐ | Percentage | 30% | | | 36% | | 40% | Baseline, mid-term, and end of project | Surveys on road conditions | Road Maintenance Management Unit in LGED |
| Increase in the level of satisfaction from road users and communities in the project influence area.* | ☐ | Percentage | TBD (by August, 2012) | | | | | | Baseline, mid-term, and end of project | Road User Survey | LGED |
| Maintenance budget needs met for the rural roads | ☐ | Percentage | 23% | 26% | 30% | 33% | 36% | 40% | Every year | Budget reports | LGED |

* *Indicator data will be disaggregated by gender.*

**Intermediate Results Indicators**

| Indicator Name | Core | Unit of Measure | Baseline | Cumulative Target Values | | | | | Frequency | Data Source/ Methodology | Responsibility for Data Collection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | YR1 | YR2 | YR3 | YR4 | End Target | | | |
| **Accessibility Improvement Component** | | | | | | | | | | | |
| Upgrading of 750 km of UZRs and improvement of 500 km of URs | ☐ | Km- Cumullative | 0 | 0 | | 488 km (UZR); 325 km (UR) | 525 km (UZR); 350 km (UR) | 750 km (UZR); 500 km (UR) | Annually | Project Progress reports | LGED |
| Rehabilitation and periodic maintenance of 3550 km roads and 450 km of Performance Based Maintenance Contract (PBMC) roads | ☐ | Km- Cumullative | 0 | 0 | 710 km (RPM) ; 90 km (PBMC) | 1598 km (RPM); 203 km (PBMC) | 2485km (RPM); 315 km (PBMC) | 3,550 km and 450 km of PBMC | Annually | Project Progress reports | LGED |
| Construction of ghats | ☐ | Number- Cumullative | 0 | 0 | - | 10 | | 20 | Mid term and end of the project | Project Progress reports | LGED |
| Rehabilitation of inland waterways (pilot) | ☐ | Percentage of dredging contract completed | 0 | 0 | | 50% | | 100% | Mid-term and at the end of theproject | Project Progress Report | LGED |
| Increase in direct employment in road improvement and maintenance works* | ☐ | Person-years | 0 | 5,500 | 16,500 | 22,000 | 33000 | 77000 | Quarterly | Project Progress reports | LGED |
| Number of women trained under PBMC component | ☐ | Number Cumullative - | 0 | 150 | 300 | 450 | 600 | 650 | Semi-Annually | Project Progress reports | LGED |
| Improvement and development of Growth Center Markets | ☐ | Number Cumullative - | 0 | 0 | 10 | 25 | 35 | 50 | Quarterly | Project Progress reports | LGED |
| Roads built incorporating proper safety measures | ☐ | Length in km of roads built for which designs were audited from road safety perspective | 0 | | 1200 | 2500 | 3900 | 5250 | Quarterly | Project Progress reports | LGED |

* Indicator data will be disaggregated by gender.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| All 5 shops in WMS per Growth Center Markets made fully functional 3 months after completion of construction | ☐ | Fully functional WMS | 0 | 0 | 10 | 100 | 175 | 250 | Annual | Project Progress reports | |
| **Institutional Strengthening, Capacity Building and Governance Enhancement Component** | | | | | | | | | | | |
| | | | | | | | | | | | |
| Business Plan developed on the Maintenance Policy | ☐ | Number | Draft Policy | Approved by the Cabinet | Business Plan Drafted | Business Plan Implemented | BusPlan milestones met | BusPlan milestones met | Annual | Budget reports, IPA reports | LGED |
| Implementation of key MIP (ORA) actions | ☐ | % of LGED targets resolved | 20% | | 30% | 45% | 70% | 100% | Half-yearly | Project Progress Reports, IPA reports, | LGED |
| LGED implementation of Integrated Decision Support System (IDSS) | ☐ | Implementation milestones met | 0 | TOR/RFP issued | First phase [system definition] completed | Next phase [system trialling] underway | Transition of LGED systems into the IDSS | IDSS fully operational and utilized | Half-yearly | Project Progress Reports, IPA reports | LGED |
| LGED implementation of comprehensive IT-based maintenance management system | ☐ | Technical milestones met | Functionally limited non-networked RIS | Capacity building underway | Database / system upgrading finalized | MMS database populated and used | MMS outputs used in Budget processes | MMS fully integrated in IDSS-based processes | Half-yearly | Project Progress Reports, IPA reports | LGED |
| Increased overall Resource Efficiency of LGED | ☐ | Operational costs as % of total budget annually | 6.0% | 6.0% | 5.8% | 5.5% | 5.2% | 5% | Annual | Budget reports, IPA reports | LGED |
| **Rural Transport Safety Component** | | | | | | | | | | | |
| Number of school teachers in project areas who have been trained to deliver road safety classes | ☐ | Numbe Cumullative r- | 0 | 40 | 160 | 280 | 400 | 500 | Quarterly | Project Progress Reports | LGED |
| Pilot on data collection on community level and data analysis completed in selected districts | ☐ | Number of districts for which the data was collected | 0 | 0 | 8 | 8 | 8 | 8 | Quarterly | Project Progress Reports | LGED |
| Road Safety Audit Guidelines are finalized and LGED staff training | ☐ | Completed deliverable, number of staff trained at LGED | 0 (all guidelines developed several years ago require substantive revisions) | Guidelines revised; 18 staff from LGED trained in RSA | 15 Trained staff involved in RSA of designs of project roads | | | 15 Trained staff involved in RSA of designs of project roads | Quarterly | Project Progress Reports | LGED |

## Annex 2: Detailed Project Description
## Bangladesh: Second Rural Transport Improvement Project (P123828)

1. The project rationale is to scale up and expand the accomplishments in rural roads infrastructure development under the recently completed RTIP-I. This includes expanding the project's scope to improvements in inland water transportation and the introduction of performance based maintenance (routine and periodic) contracts for rural roads. The standard engineering design guidelines and specifications for each of the civil works components have been prepared and are available as part of the final project preparation report. The outline design summary for each component included in Annex 9 guide the preparation of detailed designs during implementation to be included in the BoQs part of the bidding documents. The works on the RPM roads will begin in the first year and then continued through the subsequent years. Therefore, RTIP-II consists of the following components:

**A. Accessibility Improvement Component (US$338.1 million):** Component A will comprise five sub-components:

***(i) Sub-Component A1: Rural Road Improvement (US$145.8 million)***:

2. Under this sub-component, the project will finance improvement of about 750 km of Upazila roads and about 500 km of Union roads in 26 districts through upgrading earthen roads to paved roads standard. The engineering design will be audited to ensure incorporation of appropriate road safety features. The sub-component will include land acquisition (only for Upazila roads) and compensation of persons affected by the project, environmental mitigation measures, road safety and activities by women's groups. Upazila and Union roads were selected using a multi-criteria methodology. Land acquisition and resettlement costs will be financed by GoB counterpart funding.

***(ii) Sub Component A2: Rural Road Maintenance (US$167.0 million):***

3. **(a) Rehabilitation and Periodic Maintenance (US$153.0 million)**: This sub-component will finance the rehabilitation and periodic maintenance of about 3,550 km of roads. The works do not require land acquisition as the works are to be executed on the existing roads alignment. The sub-component will include environmental mitigation measures, road safety measures and activities by women's groups. Roads to be included in the periodic maintenance sub-component will be eligible if they have drainage gaps less than six meters. For rehabilitation works, drainage structures will be limited to 30 m. The first-year program has been identified and agreed with the World Bank, and LGED is initiating the preparation of bidding documents. The first-year program includes about 900 km of roads.

4. **(b) Performance-Based Maintenance Contracts (US$14.0 million)**: Under this sub component, LGED will also promote routine and periodic maintenance, emergency repairs, etc., through the Performance Based Maintenance Contracting (PBMC) by replicating DANIDA pilot on about 450 km of roads in ten districts during the five-year period of the contracts. Initially in phase-1 about 120 km of roads will be taken up under PBMC contracts in four districts of the project. These contracts do not pay the contractors based on inputs and activities

but on outputs (outcomes) in terms of service quality of the roads sustained. The roads completed under the Bank financed RTIP-I will be given preference for such performance based maintenance to ensure sustainability. The works will be carried out by local contractors and providing significant employment and income earning opportunities for local women especially. The approach is expected to reduce maintenance costs, improve road conditions and reduce the management burden for LGED. LGED engineers and local contractors will start to receive training in PBMC in March 2012 to complete it by end April 2012. The details on the PBMC modality are in included in Annex 10.

***(iii) Sub Component A3: Rural Waterways and Ghats (US$3.1 million)***:

5. **Dredging (US$1.49 million)**: To improve year round accessibility, the project will pilot low-impact dredging at two rural waterways using local technology and support for removal of temporarily constructed earthen bunds across waterways, protection works at erosion-prone and vulnerable points along bank lines, enhancing safety by installation of navigational aids. Two-river channels have been identified: the first channel on the Turag-Bansi river is 18.7 km long, from Kaliakoir to Mirzapur in Tangail district; the second channel on the Titas river is 26 km long, from Kathalia to Batikandi in Comilla district. The environmental impact assessment will be carried out and bidding documents prepared during the first year of the project for implementation. The cost estimates have been prepared.

6. **River Jetties (US$1.63 million)**: The sub-component will finance improvement of accessibility and construction of river infrastructure (ghats, jetties) at about 20 locations including ten on the rivers in the pilot dredging sub-component. During project preparation, 43 ghats have been identified which are currently leased out without major risk of erosion and a substantial level of traffic. Further analysis following an agreed methodology was under-taken to reduce the number of ghats to about ten to be supported under this project. The selection methodology included consultation with beneficiaries to confirm the priorities.

***(iv) Sub Component A4: Growth Center Markets (GCMs) (US$ 5.2 million):***

7. The project will support the improvement and development of 50 markets employing women. The final list of markets was selected following an agreed selection methodology including consultations with beneficiaries. Out of 109 markets shortlisted for development and then using a multi socio-economic criteria the final about 50 markets were identified for approval for construction under RTIP-II. In addition to financing the market infrastructure, this project will aim at strengthening management and operation of GCMs by providing support to the markets committees, improving the selection process of women and enhancing their capacity to operate shops in WMS.

***(iv) Sub Component A5: Project Supervision and monitoring consultants (US$17.0 million):***

8. ***Project Monitoring and Supervision Consultancies (US$17:00 million):*** This sub-component includes the services of two Design and Supervision Consultants (two DSC- $10.0m) and one Management Support Consultant (MSC- $2.5m).The Management Support Consultancy

(MSC), will serve as a team leader across the project to provide supervisory and managerial support to LGED. The two Design and Support Consultants (DSC) will each be responsible for supervision and implementation of project components in 13 districts (DSCs, R-1 and R-2) at the field level. The detailed TORs including the specialist positions and the respective person month required have been prepared for the RFPs. This component also includes cost of equipment and vehicles (US$4.5 million).

**B. Institutional Development and Enhancement Component (US$11.9 million)**: The component comprises two sub-components:

9. ***Sub Component B1: Institutional Development and Governance (US$8.9 million)***: Support under this Project sub-component will be aimed at sustainable 'whole of function' policy reforms and capacity improvements, directly linked to key action targets in the Project's Governance and Accountability Action Plan (GAAP). The main activities being implemented under this Sub-component are key elements in the LGED Management Improvement Plan (MIP), established during 2011 to take up the LGED-centered recommendations of the joint Bank / GoB LGED Operational Risk Assessment (ORA) of 2007-8. The new MIP is the LGED 'road map' for strategic medium-term action progressively over 2012-2016 to enhance the Department's capacity, effectiveness, governance and accountability, including through LGED-wide implementation of modern IT-assisted networking of systems, communications, information management, technical processes and business tools. Key project-supported milestones in this context will be operationalization by mid-Project of an IT/ICT-enabled Integrated Decision Support System (IDSS) and a modern transaction-based Financial Management System (FMS), both covering all LGED activities. When fully implemented in the LGED, the IDSS and the FMS will jointly enable significantly improved agency resource planning and management, performance accountability and transparency. The MIP will also be used by LGED as a framework to harmonize future sector assistance among development partners. Over that 2012-2016 timeframe, this sub-component will fund substantial expert assistance for modernization of the main LGED technical and operational policies concerning works design / contracting / management, quality control and infrastructure maintenance, which will be undertaken in parallel with comprehensive staff training and capacity-building measures from the first Project year onwards for LGED units at HQ and field levels. The main Sub-component elements are as follows:

- Strengthening LGED performance management and governance capacity **(US$3.15 million**).
  (i) Acquisition and implementation of new IT and ICT assets and resources to facilitate LGED-wide networked operation of key technical, accounting, planning and management systems, databases, processes and controls (US$2.25 millin).
  (ii) Establishment of IT/ICT based Integrated Decision Support System (US$0.30 million).
  (iii) Upgrading the LGED Monitoring and Evaluation (M&E) processes and tools for agency-wide IT/ICT-supported access and application (US$0.15 million).
  (iv) Establishment of new transaction-based Financial Management System (US$0.25 million).

(v) Strengthening of LGED strategic coordination, monitoring and business planning in implementation of the LGED Management Improvement Plan (US$0.20 million).

- Implementing new LGED Maintenance Policy and operational strategy **(US$2.60 million)**.
  (i) Capacity building at HQ and field levels in comprehensive IT-supported road asset management policy, functions, systems and operations including piloting of alternative pavement design and row building with maintenance technologies (US$1.85 million).
  (ii) Implementation of new technology and skills for road condition surveying and axle-load-limit monitoring / enforcement on LGED roads (US$0.75 million).
- Enhancing LGED policies, standards and capacity in works planning, design, project implementation and quality management **(US$2.15 million)**.
  (i) Re-development of LGED Structures Manual into new comprehensive Infrastructure Management Code and Manual for all sectors (US$0.20 million).
  (ii) Establishing an LGED works costs database, updating the LGED Schedule of Rates and make both widely accessible via the new ICT platform (US$0.20 million).
  (iii) Upgrading of LGED manuals and technology / equipment at HQ and field levels for works Quality Control and Quality Assurance, plus 'pilot'laboratories ISO Certification program in QMS for LGED staff (US$0.80 million).
  (iv) Updating of LGED standards, practices and hydrological data in Bridge planning, design, construction and management (US$0.60 million).
  (v) Updating the LGED Environment Management framework, processes and enhancing the EMIS for LGED-wide access and project application (US$0.20 million).
  (vi) Enhancing the LGED 'bitumen heating and distribution' resources for support to smaller-scale LGED contractors to improve works quality including piloting of cold/warm asphalt mixes (US$0.15 million).
- Strengthening LGED training, HRD and sector research capacity (**US$1.00 million**).
  (i) Enhancement of LGED training programs for staff, LGI and rural community requirements, and access for LGED staff to advanced external programs / courses in priority fields (US$0.50 million).
  (ii) Piloting of collaborative 3-year LGED-BUET program for small-to-medium scale sector research projects (US$0.35 million).
  (iii) Training and workshops for women in Project districts to enhance their development and participation in district-level LGED works including formation of micro-enterprises for raod maintenance (US$0.15 million).

10. ***Sub Component B2: Project Implementation (US$3.0 million):*** LGED's capacity will be strengthened in project performance monitoring and management and to regularly gather information to assess the project's effectiveness in meeting the agreed PDO. The support will include services for integrated performance audit, socio-economic and monitoring surveys.

11. The concerned LGED – MIP working groups, under overall direction of an LGED Additional Chief Engineer, will oversee the provision of the Project-funded external assistance and other inputs in these areas. This will foster wider LGED 'ownership' of this Component and enhance the absorption and operationalization of planned results and outputs. Wherever practical, the external TA / consulting expertise will be 'embedded' on-site within the relevant

'mainstream' LGED units, under the responsibility there of the relevant senior LGED line manager(s). There will be close monitoring of expected outputs and results by the LGED and the Bank, including with regard to sustainability of capacity / performance improvements in LGED operations beyond the Project-funded support.

12. The overall assistance via this Sub-component will comprise (i) specialist technical assistance (TA) and consultancy services (approximately US$4.75 million); (ii) goods, materials and/or software licenses/IP (approximately US$2.95 million); and (iii) funding of equipment research and training/seminar/workshop fees and delivery costs (approximately US$1.20 million).

**C. Rural Transport Safety Component (US$3.5 million):**

13. Under RTIP-I, a Rural Transport Safety (RTS) 'pilot' was implemented in three districts of Bangladesh. The pilot's success has provided a basis for scaling up these interventions in the 26 RTIP-II project districts. In parallel, LGED requires significant capacity building in road safety engineering, monitoring and management to play a more effective 'sector leadership' role in the improvement of rural road safety in Bangladesh. This Component will therefore support a combination of interventions and initiatives in the following fields.

***Technical assistance support for integrating road safety engineering measures and awareness building and education along project roads.***

14. It is important to ensure safety of roads that will be improved and maintained under the Accessibility Improvement Component of the Project. The component will include road safety audits of the designs of the project roads under the guidance and training of the road safety advisor. As a result it is expected that a set of road safety measures appropriate for these types of rural roads will be identified and properly incorporated in the designs, standard layouts and technical specifications will be prepared as guidance to the design teams, with specific attention to the safety of vulnerable roads users and implementing safety measures at at-grade rail crossings, to be funded under this Project, and a comprehensive training program and subsequent on-the-job training in Road Safety Audit will be conducted for a selected group of LGED engineers and staff of the Road Safety Unit of the LGED. Significant importance should be placed for improving safety during civil works. Costs associated with integration of road safety engineering measures such as signs, markings, street lights, pedestrian facilities, etc. will be included as part of civil works under the first component of the project.

15. Project support under this Component will also facilitate scaling-up the awareness and education activities piloted under RTIP-I and mainstreaming in 26 project districts. Training will be provided to participating Local Government Institutions (LGIs), community leaders and members of the Road Safety Committees at Upazila and District levels. As the Upazila (LGED) engineers are required to do 'public awareness' activities as part of their functions, a Train-the-Trainer program on rural road safety awareness building and road safety education will be developed for LGED field staff (to be offered by the LGED central and regional Training Units), and public awareness campaigns will be prepared and launched. Stakeholder consultation on rural transport safety priorities and challenges will be conducted as part of these road safety

activities. Another Train-the-Trainer program will be delivered to school teachers in project districts, to enable them to include road safety in the curriculum of primary and secondary school students. Training needs of the local police will be identified and a training program will be initiated to improve rural road policing, local enforcement and data collection. The project will also support training-oriented workshops for local associations of drivers and rickshaws to create awareness about road rules and regulations. In those workshops, project-procured reflectors (etc.) for rickshaws and other non-motorized traffic will be distributed to improve night-time visibility.

***Technical assistance for strengthening road safety capacity of the LGED.***

16. The project will provide technical assistance to the newly established dedicated Road Safety Unit in LGED that will include expert advisory services and training. Technical assistance will also include:

- Development of road safety related guidelines and manuals and related policies, including but not limiting to – on "Road Safety Audit", "Blackspots Identification and Treatment", and "Safety during Road Works".
- Review / revision / updating of LGED design standards and codes on road safety factors to address identified gaps and to incorporate best international practice as applicable to Bangladesh.
- Formulation of a sustainable LGED-centered rural road safety policy and action plan
- Improvement of road safety monitoring and evaluation for assessment of the effectiveness of rural road safety interventions.

17. The project will support LGED actions to improve data collection at Upazila and Union levels and to build capacity at HQ level in road accident data management and analysis. An assessment of the functionality and accessibility of the Road Accident Module of the central Road Information System in LGED will be done to determine approach in strengthening LGED capacity in accident data management and analysis. In the absence of reliable data from the police on accidents on the rural roads, the project will pilot approach to supplement missing information with data collection at community levels with the help of LGED field offices, community wardens and possible engagement of an NGO to help with data collection. Once underway, such data collection will allow LGED to do proper identification of blackspots on its network and develop appropriate remedial measures. The pilot approach is expected to be implemented in eight districts. The project will also consider supporting training programs for the police in properly recording road accidents.

18. The project will strengthen LGED-wide staff training in road safety. A comprehensive training program will be developed based on the five-day training implemented during RTIP-I. In addition more detailed and advanced modules will be developed to cover aspects of safe design of rural roads, geometric design, design of road safety countermeasures, road safety audit, safety during road works, etc. These programs will be developed by national road safety experts with possible collaboration with Banglagesh Univesity of Engineering and Technology (BUET) and with the support of the road safety advisor under the project and/or other international RS consultants as required.

19. This component will be managed primarily by the Central Road Safety Unit (CRSU) of the LGED, with support from PMC and internationally-experienced TA, with specific progress milestones and measurable results for monitoring and evaluation.

20. The Component will finance (i) technical assistance (TA) and/or consultancy services; (ii) training programs, research program, workshops, surveys, campaigns and associated consumables; (iii) goods, materials and/or logistics.

**D. Component D: Contingent Emergency Response Component (US$0 million)**

21. Should an adverse natural disaster event occur that causes a major calamity, the GoB may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the GoB to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available through as a result of the emergency.

22. Disbursements would be made against a positive list of critical goods or the procurement of goods, works, and consultant services required to support the immediate response and recovery needs of the GoB. All expenditures under this component, should it be triggered, will be in accordance with BP/OP 8.0 in combination with the Bank's Immediate Response Mechanism (IRM) guidelines dated November 3, 2011, and will be appraised, reviewed and found to be acceptable to the Bank before any disbursement is made. In addition to reallocation of funds from other project components, the contingent component may also serve as a conduit for additional funds to be channeled to the project in the event of an emergency.

## Table 2.1 Detailed Project Cost Table

| Component | Unit | Quantity | Unit Cost Feb2012 (US$M) | Indicative Costs (US$M) | % of Total | Local (US$M) gob | % of Bank's Share | Bank share (US$M) |
|---|---|---|---|---|---|---|---|---|
| **Component A** | | | | | | | | |
| **1. Rural Road Improvement** | | | | | | | | |
| a) Improvement of Upazila Road | Km | 750 | 0.145 | 108.75 | 26.07% | 10.88 | 90% | 97.88 |
| b) Improvement of Union Road | Km | 500 | 0.074 | 37.03 | 8.88% | 3.70 | 90% | 33.33 |
| **2. Rural Road Maintenance** | | | | | | | | |
| a) Rehabilitation and Maintenance | Km | 3550 | 0.043 | 153.09 | 36.70% | 61.24 | 60% | 91.85 |
| b) PBMC | Km | 450 | 0.031 | 13.92 | 3.34% | 5.57 | 60% | 8.35 |
| **3. Market Development** | | | | | | | | |
| a) Construction of GCM (including Women Market Section) | No. | 50 | 0.094 | 4.69 | 1.12% | 0.47 | 90% | 4.22 |
| b) Market Operation and Management | No. | 50 | 0.010 | 0.52 | 0.12% | 0.05 | 90% | 0.47 |
| **4. Rural Waterways** | | | | | | | | |
| a) Pilot Dredging | Km | 44 | 0.034 | 1.49 | 0.36% | 0.15 | 90% | 1.34 |
| b) River Transport Infrastructure (RJ) | No. | 20 | 0.081 | 1.63 | 0.39% | 0.16 | 90% | 1.47 |
| **5. Project Supervision Consultancies** | | | | | | | | |
| a) Management Support Consultancy | | | | 2.50 | 0.60% | 0.25 | 90% | 2.25 |
| b) Design and Supervision Consultancies (2) | | | | 10.00 | 2.40% | 1.00 | 90% | 9.00 |
| c) Equipment and Supervision Vehicles/Accessories | - | | | 4.50 | 1.08% | 0.45 | 90% | 4.05 |
| **Component B: Institutional Strengthening** | | | | | | | | |
| a) Goods, Materials and/or IP (Integrated Performance) | | | | 2.95 | 0.71% | 0.30 | 90% | 2.66 |
| b) Training / Seminar / Workshop fees | | | | 1.20 | 0.29% | 0.00 | 100% | 1.20 |
| c) Technical Assistance (TA) and/or Consultancy Serves | | | | 4.75 | 1.14% | 0.48 | 90% | 4.28 |
| **2. Capacity Building** | | | | | | | | |
| a) Human Resource Development (HRD) | - | | | 2.50 | 0.60% | 0.00 | 100% | 2.50 |
| b) Social monitoring surveys, integrated performance audit (IPA) consultant, other consultancies | | | | 0.50 | 0.12% | 0.05 | 90% | 0.45 |
| **Component C: Road Safety** | | | | | | | | |
| a) Technical Assistance and/or Consultancy Services for Road Safety | - | | | 1.65 | 0.40% | 0.17 | 90% | 1.49 |
| b) Goods, Materials and/or Logistics for road safety | | | | 0.40 | 0.10% | 0.04 | 90% | 0.36 |
| c) Training, Workshops and Collaborative Research for road safety | | | | 1.40 | 0.34% | 0.00 | 100% | 1.40 |
| **Component D: Contingent Emergency Response** | | | | 0.0 | 0.00% | 0.00 | 0% | |
| **Other** | | | | | | | | |
| 8. Physical Contingency (10%) | - | | | 32.11 | 7.70% | 8.22 | | 23.89 |
| 9. Price Contingency (4%) | - | | | 12.84 | 3.08% | 3.29 | | 9.56 |
| **Sub-Total** | | | | **398.43** | **95.52%** | **96.45** | | **301.98** |
| 10. Salary, Allowance and Operating Cost | | | | 8.60 | 2.06% | 8.60 | | 0.00 |
| 11. Land Acquisition and Resettlement | | | | 9.72 | 2.33% | 9.72 | | 0.00 |
| 12. CD VAT | | | | 0.35 | 0.08% | 0.35 | | 0.00 |
| **Sub-Total** | | | | **18.67** | **4.48%** | **18.67** | | **0.00** |
| **Grand Total** | | | | **417.10** | **100.00%** | **115.12** | | **301.98** |

## Annex 3: Implementation and Institutional Arrangements
## Bangladesh: Second Rural Transport Improvement Project (P123828)

### Project Implementation and Institutional Arrangements

1. **Project Steering Committee**. A high-level empowered ***Project Steering Committee (PSC)*** will be established to provide oversight and undertake periodic review of project implementation and addressing the issues hampering the progress. Project Steering Committee, which shall be chaired by the Secretary, Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, and include as members, the Director General, Local Government Division, the Chief Engineer and Additional Chief Engineer (Planning) of LGED, and representatives of the Agriculture, Water Resources and Rural Institutions Division; IMED; Finance Division, Economic Relations Division; and the Ministry of Land. Aditionally, a Project Coordinator, having the rank of Superintending Engineer, under the Chief Engineer, LGED, will be responsible for the oversight coordination and supervision of Project activities.

2. **The Project Management Unit** (PMU) established within LGED under RTIP-I will continue to coordinate all project preparation and implementation activities for RTIP-II. The PMU will be responsible for overall implementation of the project, which includes planning, budgeting, procurement, coordination, management, and monitoring of various components. The PMU is headed by a Project Director (PD) supported by two Deputy Project Directors with the associated adequate staff, who will be based at headquarters. Further, two additional Deputy Project Directors will be based in the field supported by staff working on a full time basis on project implementation, with expertise in social, environmental, procurement and financial management. Most of this staff already has experience in implementing previous Bank's or other similar donor assisted projects. A Project Preparation Consultant (PPC) assisted LGED in the identification of project components and design of the first year's civil works program. PMU will be supported by an international management consultant and two design and supervision consultant teams for which selection processes already have started during project preparation.

3. During implementation, LGED will receive support from an internationally experienced Management Support Consultant (MSC) in the following areas:

i) Project management including coordination, reporting, monitoring of progress and programs;
ii) Budgetary and financial management,
iii) Review of quality control and quality assurance,
iv) Reviewing payment certificates if required,
v) Contractual advice and settlement of disputes, claims,
vi) Implementation of the safeguard management plans (environment, resettlement etc.), and
vii) Design and management of a monitoring and evaluation survey of socio-economic aspects of RTIP-II.

4. LGED started the process of selecting two internationally experienced Design and Supervision Consultants (DSC) during project preparation to assist in the preparation of the engineering and bidding documents and supervision of execution of the second and subsequent-year civil works programs. Based on the experience of RTIP-I, the team leaders of the DSC consultants will be based in the field rather than in Dhaka for closer supervision of the work programs. Each field-based Deputy Project Director will be responsible for 13 districts, one for R-1 Districts (comprising of Pabna, Sirajgonj, Tangail, Dhaka, Manikgonj, Gazipur, Narayangonj, Narsingdi, Mymensingh, Jamalpur, Sherpur, Netrokona, and Kishoregonj districts) and another responsible for R-2 Districts (comprising of Munshigonj, Comilla, B-Baria, Chandpur, Sylhet, Habigonj, Sunamgonj, Moulvibazar, Noakhali, Laxmipur, Feni, Chittagong, and Cox's Bazar districts).

5. Project implementation will occur mainly at the district level, with each district headed by an Executive Engineer. Executive Engineers will be supported by approximately eight staffs including Assistant Engineer Sociologist, Sub-Assistant Engineer, Accountant, and other technical staff. At the Upazilla level, the Upazilla Engineer will be supported by Sub-Assistant Engineer, and other technical staff. A detailed Organizational Chart as well as a Project Management Organogram have been included at the end of this Annex.

**Financial Management, Disbursements and Procurement**

***Financial Management (FM)***

6. A financial management (FM) assessment was carried out to evaluate the overall financial management environment prevailing in the country and within LGED. More specifically, the Bank assessed the financial management risks underlying the project, the capacity of the implementing entity (LGED), and the FM systems in place. The assessment also identified the financial management arrangements under the proposed project that would need to be in place to meet the Bank's fiduciary requirements in accordance with its OP/BP 10.02. Lessons learned during the implementation of RTIP-I were also considered during the assessment. The project financial management arrangements for RTIP-II are considered to be satisfactory based on the FM assessment, the analysis of the risks identified and the risk mitigation measures outlined.

7. LGED is a Government department under the Local Government Division (LGD) of the Ministry of Local Government, Rural Development and Cooperatives, and does not have an integrated financial management system; its financial management is segmented and ring fenced for each project and revenue budget unit. LGED’s accounting system is cash based, follows a single entry book-keeping and does not include a statement of assets and liabilities. LGED does not prepare interim financial statements to facilitate monitoring of budget implementation nor produces an annual financial statement to show its overall financial position. Under the Bank-funded RTIP-I, LGED undertook an Institutional Strengthening Action Plan (ISAP) that included strengthening of financial management organization and practices but implementation measures are yet to be taken.

8. LGED has substantial experience with the Bank's financial management, disbursement procedures and financial reporting requirements. However, submission of Financial Monitoring Reports (FMRs) was often delayed and accuracy was questionable and project accounts of the RTIP have remained un-reconciled. These issues have been attributed to LGED's heavily decentralized structure, which has created difficulties in mobilizing adequate accounting resources across the field offices, transmitting financial information from field offices to headquarters, and consolidating financial information at headquarters. A financial expert appointed under a contract completed the reconciliation of the project accounts for the period until June 30, 2010. The task team will be reviewing the implementation of the findings. The reconciliation work for the remaining two years (FYs 2011 and 2012) that is under process is scheduled to be completed by July 31, 2012. While LGED submitted the annual audited financial statements for RTIP-I on a timely basis, it has shown some difficulties in resolving material pending issues identified by the World Bank in the audit reports.

9. While LGED's responses to audit issues were previously slow, substantial progress was made to address these issues in recent times. All audit objections that were material to IDA have been satisfactorally resolved. To address the risk of slow responsiveness to audit issues in RTIP-II, adequate resource mobilization and higher level involvement through a Project Audit Committee have been agreed.

10. LGED developed a Unified Financial Management System (UFMS), which was implemented in a few LGED projects but was not found adequate for being used in RTIP-I. The system is being evaluated for rolling out to all LGED before being replaced by a full integrated decision support system by the midterm of RTIP-II. This will include the deployment of comprehensive and effective IT-ICT-MIS capacity in LGED to support its major technical, administrative, governance and communication processes. The financial information systems are intended to be in place before commencement of RTIP-II so that the experience under RTIP-I is not repeated. A consulting firm that is currently working on assessing the UFMS has indicated that the UFMS as it is or with minor modification will not be ready for use at RTIP-II start up. As such, to ensure timeliness and accuracy in capturing and processing financial information, an off the shelf internationally reputed accounting software will be procured and be made operational for use of RTIP-II right from the start of the project.

11. To address the risk of slow responsiveness to audit issues in RTIP-II, adequate resource mobilization and higher level involvement through a Project Audit Committee has been agreed. Inadequate FM capacities in the project's headquarters, even weaker capacities of the District Offices and lack of a computerized accounting system have often resulted in delayed Financial Monitoring Reports based on un-reconciled financial data. Slow response on material audit objections were also the shortcomings identified in the former project and have been addressed in the FM arrangements of the upcoming project.

12. **Project Financial Management Arrangements.** As in RTIP-I, LGED, will implement RTIP-II through a PMU, under the leadership of a Project Director. The PMU will have a FM section headed by a Financial Management Specialist (FMS). The FMS will be a qualified Chartered Accountant (or equivalent) with adequate knowledge of project financial management requirements of the World Bank and GoB and proven experience in working with computerized

accounting systems. LGED will complete the recruitment process for the FMS well ahead so that the person is in place right from the start of the project. The FMS will report to the Project Director and be assisted by adequate number of Accounts Officer(s), Accountant(s) and other support staff in carrying out the FM functions of the project. The TORs for all the FM positions have been agreed with the Bank. LGED has made appropriate provisions in the Development Project Proposal (DPP) for the FMS and other FM staff.

13. **FM Risk**. The overall FM risk is assessed as Substantial. The FM risk as part of Fiduciary Management Risk in the ORAF has been identified as Substantial. The FM capacity risk as part of Institutional Capacity risk is also assessed as Substantial. The Bank has identified the necessary measures on FM staffing and systems to mitigate the fiduciary risks arising from the weaknesses of the internal control environment and FM capacities through Project Financial Management Arrangement as stated below.

14. **FM Responsibilities**. The duties of the PMU's FM section will include but not be limited to operation of the Designated Account and e-submission of withdrawal requests to the Bank; processing the bills for procurement of works, good, services and operating expenditures; disbursements of the Bank's share of all bills passed for payment from the PMU and all District Offices of the project; preparation of an annual budget, revised budget and six monthly disbursement forecasts; obtaining quarterly fund release for GoB allocated fund and submission of GoB share of the bills to the CAO, LGD for payment and coordinating with district offices for submission of bills to the District Accounts Officers (DAO); maintenance of books and records at PMU; preparation of Bank Reconciliation Statements; fixed assets management in all project locations tracking assets procurement; custody, use, disposal and physical verification; submission of quarterly IFRs to the Bank and preparation of annual financial statements and other periodic reports for the Project Director, Chief Engineer, the line ministry and other GoB agencies and the auditors; and interfacing with auditors during annual financial audit and any other audit under the project.

15. **Fund Flow and Disbursement Arrangements.** The Bank's fund will flow to a Designated Account (DA) in the form of Convertible Taka Special Account (CONTASA), to be opened in a branch of a commercial bank acceptable to the Bank. The bank will have adequate experience, manpower, network and authority to process transactions on a fast track basis. The bank holding the DA should be capable of transferring funds to the beneficiaries across the country through bank advice and completing a foreign currency transaction independently within a short period (not more than three business days). It is agreed that the project would start with transaction-based disbursement, and may convert to disbursement based on quarterly Interim Un-audited Financial Reports (IFRs), when the project demonstrates capacity to prepare reliable and timely IFRs during implementation. Replenishment to Designated Account (DA) and documentation of expenditures made from the DA will be done on a monthly basis upon submission of claims along with Statement of Expenditures (SOE)/ full documentation following thresholds to be indicated in the Disbursement Letter. The ceiling on the advance to DA will be set at 4.5 months of estimated average project expenditures. Besides, Direct Payment from the Bank to the providers of goods, works and services shall be admissible for larger payments.

16. Having regard to the weaker FM capacity of LGED District Offices and fund reconciliation issues identified in RTIP-I and to facilitate timeliness and accuracy on submission of financial reports and Withdrawal Applications, it has been agreed that no fund will flow from the Designated Account to any other Second Generation Account/ Operating Account/ Sub-Accounts to Districts or any other location whatsoever. The summary sheet of all contractors/ consultants' bills passed for payment at the District Offices will be sent to the PMU by a fast track communication for payment of the Bank's share of all the bills from the DA at the PMU level. The PMU will make the payments promptly through direct bank transfer to the beneficiaries' bank accounts, requiring no contact between the beneficiaries at the districts and the PMU officials.

17. **Reporting and Monitoring**. The FM unit will be responsible for preparing all monthly, quarterly and annual financial reports for CE, LGED, CAO, the line ministry, MOF, IMED and any other GoB agencies, consistent with the government's Project Accounting Manual. In addition, IFRs will be prepared for submission to the Bank within 45 days from the end of each quarter. The formats of the IFRs will be agreed with the borrower during negotiations. IFRs will be produced directly from the computerized project accounting system and not from any other stand alone manual or electronic system. It has been agreed that to ensure timeliness and accuracy in capturing and processing financial information, an off the shelf internationally reputed accounting software will be procured and be made operational for use of RTIP-II well ahead of project effectiveness. While the Bank's payments will be directly captured from the DA transactions and Direct Payments, GoB funded transactions shall be captured from the monthly/ quarterly expenditures statements received from the CAO, Local Government Division rather than from the district offices of RTIP-II as the former reports would be more reliable, being generated from the computerized iBAS and based on the actual payments.

18. **Internal Audit**. Internal auditing will be carried out in accordance with a specific auditing plan and reports to be submitted to the Chief Engineer, LGED with a copy to the Secretary, LGD and the Project Director. Going beyond the financial aspects, the internal audit would look into the effective and efficient use of project resources and an independent appraisal of the working of the PMU and other partners in the implementation arrangement. Such activities will be independent of the control of those who are responsible for carrying out the financial and accounting operations as well as those engaged in the execution of services rendered. The key internal audit functions will be: (i) ascertaining whether the system of internal checks and controls operating within the organization for preventing errors and fraud is effective in design as well as in operation; (ii) ascertaining reliability of accounting and other records as well as seeing that accounting methods provide the information necessary for preparation of correct financial statements; (iii) ascertaining the extent to which the project entity's assets are safeguarded from any unauthorized use or losses; (iv) ascertaining whether administrative and financial regulations of the government and instructions issued by the Treasury as well as donors' legal requirements are followed; and (v) ascertaining the effectiveness of the system of internal control adopted in preventing, as well as detecting waste, idle capacity and extravagance. Until LGED attains the acceptable capacity for performing the Internal Audit Function, the PMU will contract out each year's internal audit function to a firm of Chartered Accountants with adequate relevant experience under a TOR to be prepared by the PMU and cleared with the Bank. Such a TOR should follow the good practices in line with the standards and guidelines of the Institute of

Internal Auditors. The findings of the internal audit will be acted upon within a month of the report after consultation with the relevant units.

19. **External Audit**. The FAPAD of C&AG will, within six months from the end of the financial year, carry out audit of the project. The Project Director, PMU will be responsible for audit follow up and taking remedial actions with the assistance from FMS and the PMU's Program and Implementation section(s) relevant to the objections. The PMU and LGED with the help of MLGRD&C will arrange tripartite meetings to resolve outstanding audit objections within three months from the receipt of audit report and improve the internal control arrangement to prevent recurrence of issues that would trigger audit objections.

**Table 3.1: Audits**

| ImplementingAgency | Audit Type | Auditor | Deadline |
|---|---|---|---|
| LGED | Audit of Project's Annual Financial Statements | Foreign Aided Project Audit Directorate under the Comptroller and Auditor General | December 31 |

20. **Audit Objections.** RTIP. All audit objections on the RTIP financial statements until 30 June 2011, that were material to IDA have been satisfactorally resolved LGED has agreed to address all audit issues that might be raised by the auditors on the financial statements of RTIP for final project year- FY 2012, within three months from the receipt of the audit report.

21. **Measures to reduce audit objections**: Based on the lessons learnt from RTIP the expected audit objections on the proposed project would betypical of an infrastructure project, which cannot be addressed by FM design itself. These can be minimized by more intensive supervision by Engineers and Supervision Consultants. The team and the LGED have agreed on a standard checklist to be designed on each Packages bill containing confirmation from the Certifying Engineer/Consultant that the certified bill is free from any irregularities of the kind mentioned in the check list.

22. **Project Audit Committee.** In order to ensure that the audit reports generated by the Internal Audit and the External Audit of the project are reviewed and to warrant robust follow up of the audit recommendations, a Project Audit Committee (PAC) will be constituted. The Joint Secretary LGD will be in charge of or overseeing the Audits as the PAC's chair, and an Additional Chief Engineer LGED, Audit Specialist, LGSP II LGD, and the Project Director as members. The audit committee will meet at least twice a year to review the audit reports and to follow up on audit recommendations. The Project will provide necessary secretarial and logistical support to the PAC.

23. **Supervision Plan**. Considering that the overall risk of the project is "substantial" a supervision mission will be conducted at least every six months. The supervision mission will ensure that adequate financial management arrangements are maintained for the project, both at the PMU and the district levels. Regular reviews will be carried out to ensure that the expenditures incurred by the project remain eligible for the Bank's funding and that IFRs are

timely submitted, the computerized accounting system is in operation on a continued basis and the Project Audit Committee is truly functional.

***Procurement***

24. **Procurement Reform and Capacity- Country and LGED.** To address the key findings of the procurement capacity assessment (mentioned in the main text paragraph 69) the following mitigation measures are proposed for RTIP-II: ensure LGED implements PROMIS (Procurement Management Information System); appropriate record-keeping at district and sub-district offices through monitoring LGED's capacity building plan; application of liquidated damages in case of delays in contract implementation and adoption of e-Procurement as soon as ready. As of end January, 2012, under PPRP-II about 2,100 officials received three-weeks (74 courses) training on procurement. Out of these 3,900 trained GoB staff, about 800 persons are from LGED.

25. **Operational Risk Assessment (ORA)**. The 2008-2009 ORA of LGED covered overall procurement practice of LGED and it was also consulted during assessment of LGED's procurement capacity. The ORA suggested improvement of LGED's project management and institutional strengthening. The Management Support Consultant (MSC) for RTIP-II was a relevant product of the suggestions of ORA.

26. **Measures completed before commencement of procurement of goods, works and non-consultancy services under the project**. (a) a model tender document for conventional civil works (RPM-UZR-UNR-GCM-RJ) cleared with the Bank, (b) a model tender document for performance-based maintenance works (PBMC), (c) RFPs for Supervision (R1 and R2) and Management Support Consultancy (MSC). All these actions have been completed as part of advance procurement actions.

27. **Measures to be taken during project implementation**. (a) The Project Managers, Executive Engineers and Assistant Engineers need to acquire procurement training; (b) RTIP-II part of LGED's quarterly PROMIS report becomes the quarterly "RTIP-II Procurement Performance Monitoring Report" (PPMR or PROMIS-RTIP-II) which LGED shall submit to the Bank starting from six months after the project effectiveness; (c) All district and sub-district engineers of LGED and bidding community will be given awareness training on PBMC, its merits and demerits; (d) LGED will review the performance of supervision consultants on an annual basis and report to the Bank during support missions; (e) LGED will arrange procurement orientation or training workshops for RTIP-II procuring entities and the Bank will provide some resource persons for part of it; (f) The Procurement plan will be updated semi-annually or as required; (g) LGED will conduct independent procurement audits for RTIP-II each year and share the report with the Bank; (h) The Bank will conduct its own post-review of at least 15 percent of the post review contracts on a semiannual/annual basis to ensure compliance with the World Bank's Procurement/Consultant Guidelines and procedure in accordance with the financing agreement.

28. **Addition Procurement Risk Mitigation Measures**. In addition, the following steps will be followed as part of procurement and implementation arrangements: (a) issues by June 30, 2013 all LGED procuring entities under RTIP-II will have at least one person with completed national three-week training on procurement and all engineers working in RTIP-II will have

completed specialized training arranged by LGED on red flags of fraud and corruption; (b) all bid evaluation reports will cover verification of recommended bidders' post-qualification information [for goods and works]; (c) all contract negotiations will be preceded by additional due diligence by LGED on verification of recommended consultants' experience and curriculum vitae of key staffs [for consultancy services] (d) making bidders generally aware about fraud and corruption issues; (e) awarding of contracts within the initial bid validity period as much as possible, and closely monitor the timing; (f) taking action against corrupt bidders in accordance with Section I of the Bank's Procurement/Consultant Guidelines besides provisions of PPA/PPR; (g) preserving records and all documents regarding public procurement, in accordance with the Bank Guidelines and PPA/PPR, to facilitate smooth procurement audit or post-review; (h) publishing contract award information on CPTU and LGED website within two weeks of contract award (and in UNDB and Bank's external website for ICBs or international consultancies); and (i) ensuring timely payments to the suppliers/ contractors/consultants. LGED's PPMR (or PROMIS-RTIP-II) will be a useful monitoring tool for measuring procurement performance.

29. **World Bank's Procurement Guidelines**. Procurement financed under the Project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and "Guidelines: Selection and Employment of Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011, and the provisions stipulated in the Financing Agreement.

30. **Procurement Planning**: For each contract to be financed by the project, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements and time frame are agreed between the Borrower and the Bank in the Procurement Plan

31. **Particular Methods of Procurement of Goods, Works and Non-consultancy services.** Except as otherwise agreed in the procurement plan, works, goods and non-consultancy services may be procured on the basis of International Competitive Bidding. Procurement of goods, works and non-consultancy services having estimated value less than the ceiling stipulated in the Procurement Plan may follow National Competitive Bidding (NCB) and Shopping. There may also be some procurement at beneficiary level using community participation. Direct Contracting (Goods/Works) may be allowed under special circumstances with prior agreement of the Bank. NCB would be carried out under Bank Procurement Guidelines and acceptable to the People's Republic of Bangladesh For the purpose of NCB the following shall apply:

a) post bidding negotiations shall not be allowed with the lowest evaluated or any other bidder;
b) bids should be submitted and opened in public in one location immediately after the deadline for submission;
c) lottery in award of contracts shall not be allowed;
d) bidders' qualification / experience requirement shall be mandatory;
e) bids shall not be invited on the basis of percentage above or below the estimated cost and contract award shall be based on the lowest evaluated bid price of compliant bid from eligible and qualified bidder; and

f) single stage two envelope procurement system shall not be allowed.

32. **Methods of Procurement of Consultants' Services.** Selection of Consultants will follow the Bank's Consultant Guidelines and the Bank's Standard Request for Proposals (SRFPs) is applicable for all types of selection processes. The following methods will apply for selection of consultants: Quality and Cost based Selection (QCBS), Quality-based selection (QBS), Fixed Budget Selection (FBS), Consultants' Qualification (CQ), Least Cost Selection (LCS), and Single Source Selection (SSS). Shortlist of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants. The Procurement Plan will specify the circumstances and threshold under which specific methods will be applicable, along with the Bank's review and implementation support requirements.

33. **Use of Standard Procurement Documents.** For procurement following International Competitive Bidding and all selection of consultants, the Bank's Standard Bidding Documents (SBDs) and Standard Request for Proposals (SRFPs) will be used, including the form of contract attached with SBDs and SRFPs. For all NCB packages and Performance-Based Maintenance Contracts (PBMCs), LGED will use tender documents based on model tender documents (MTD and MTD-PBMC) agreed with the Bank.

34. **Operating Costs:** The operating costs will include additional Project staff other than consultants, operating costs for operations and maintenance of vehicles (fuel, maintenance, insurance etc), renting of vehicles, office utilities, office supplies and stationeries, printing materials, souvenirs, events, workshops, rental of office buildings, bank charges, advertising costs or any other operational cost agreed with the Bank under the project's financial management mechanism.

35. **Prior review Thresholds.** The Procurement Plan shall set forth those contracts which shall be subject to the Bank's prior review. All other contracts shall be subject to Post Review by the Association. Initial Procurement plan agreed with LGED for the first eighteen months indicates the following prior review thresholds which will be updated annually based on the review of the capacity and performance of the procuring entity and will be reflected in the updated procurement plan as appropriate:

**Table 3.2: Prior Review Thresholds**

| Sl. no. | Description | World Bank (Prior Review) |
|---|---|---|
| a. | each contract for goods and works procured on the basis of International Competitive Bidding (ICB). | √ |
| b. | all contracts for goods and non-consultant services estimated to cost US$600,000 equivalent or more, regardless of the procedure. | US$600,000 equivalent or more |
| c. | All contracts for works estimated to cost US$4,000,000 equivalent or more, regardless of the procurement method applied; and 1st contract of PBMC, regardless of value. | US$4,000,000 equivalent or more |
| d. | each contract for consultants' services provided by a firm, estimated to cost the equivalent of US$200,000 or more. | US$200,000 equivalent or more |
| e. | each contract for services of individual consultants, estimated to cost the equivalent of US$100,000 or more. | US$100,000 equivalent or more |
| f. | all contracts for goods/works/non-consultant services procured through Direct Contracting, and all contracts for consultants' services (both firm and individual) | √ |

| Sl. no. | Description | World Bank (Prior Review) |
|---|---|---|
| | procured under single source selection, all contracts for individual consultants hired for legal work or project-related procurement activities. | |

*Note: For Sl. No. b and c above, in case of contract packages bid and awarded in the form of lots or sub-packages, the combined estimated cost of all lots/sub-packages in a particular procurement package will determine whether it will be prior- or post-reviewed, in accordance with the thresholds given above.*

36. **Post Review.** For compliance with the Bank's procurement procedures, the Bank will carry out sample post review of contracts that are below the prior review threshold. Such review (ex-post and procurement audit) of contracts below the threshold will constitute a sample of about **15 percent (fifteen percent)** of the post-review contracts in the project. Procurement post-reviews will be done on semi-annual basis depending on the number of post-review contracts.

37. **Electronic government procurement (e-GP).** e-GP has been rolled out in June 2011 under the PPRP-II. e-GP along with afore-mentioned PPMR or PROMIS-RTIP-II will be a web based system which encompasses the total procurement lifecycle and records all procurement activities of LGED. It is anticipated that after piloting, which is currently ongoing, e-GP will be progressively implemented across GoB. RTIP-II will implement e-GP in as many contracts as possible after assessment of the adequacy of the system by the Bank.

38. **Summary Procurement Plan.** For the initial procurement plan agreed during appraisal and negotiation of the project, NCB threshold to be used are US$600,000.- for procurement of goods and US$4,000,000.- for procurement of works, which is in line with the Bank's prior review requirements. A summary procurement plan covering major procurement identified during project preparation is as follows:

**Table 3.3: Goods**

| Ref No. | Contract Description | Estimated Cost ('000 US$) | Procure-ment Method | Review By Bank (Prior/ Post) | Expected Bid Opening Date | Comments |
|---|---|---|---|---|---|---|
| G-01 | ICT equipment and facilities | 1,650 | ICB | Prior | 01/15/2013 | |
| G-02 | Vehicles- Project Implementation | 812 | ICB | Prior | 11/01/2012 | For project supervision |
| G-03 | Upgrading Laboratory QC capacity | 235 | ICB/NCB | Post | 03/01/2013 | |
| G-04 | Mobile Monitoring Equipment | 320 | ICB/NCB | Post | 03/01/2013 | |
| G-05 | Portable Weigh-bridge | 131 | ICB/NCB | Post | 03/01/2013 | |

**Table 3.4: Works**

| Ref No. | Contract Description | Estimated Cost ('000 US$) | Procure-ment Method | Review By Bank (Prior/ Post) | Expected Bid Opening Date | Comments |
|---|---|---|---|---|---|---|
| | Upazila Road Improvement (UZR)- 87 packages | 107,200 | NCB | Post | 06/01/2015 | |
| | Periodic Maintenance; RPM-75 packages and PBMC- 59 packages | 56,400 | NCB | 1st PBMC prior and others Post | 10/01/2012 | |
| | Union Road Improvement (UNR)- 77 packages | 38,440 | NCB | Post | 10/01/2012 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | River Jetties (RJ) | 1,575 | NCB | Post | 06/01/2013 | |
| | Growth Centre Markets (GCM) | 4,688 | NCB | Post | 06/01/2013 | |
| | Rural Waterways (RW)- 2 Packages | 1,500 | NCB | Post | 10/01/2013 | |

**Table 3.5: Services**

| Ref No. | Contract Description | Estimated Cost (Thousand US$) | Selection Method | Review By Bank (Prior/ Post) | Expected proposal Opening Date | Comments |
|---|---|---|---|---|---|---|
| MS-1 | Management Support Consultancy (MSC) | 2,500 | QCBS | Prior | 10/20/2012 | |
| R-1 | Design and Supervision Consultancy (D&SC) | 5,000 | QCBS | Prior | 10/09/2012 | |
| R-2 | Design and Supervision Consultancy (D&SC) | 5,000 | QCBS | Prior | 10/09/2012 | |
| S-1 | Integrated Performance Audit Consultant | 1,250 | QCBS | Prior | 11/15/2012 | |
| S-2 | Capacity Building / TA: specialist(s) in Pavement Performance and Maintenance Monitoring | 1,270 | QCBS | Prior | 01/15/2013 | |

***Note : Expected proposal Opening Date will depend on the receiving of World Bank's no objection. Maximum 08 weeks will be needed in this case upon receiving World Bank's no objection on shortlisting.***

**Environmental and Social (including safeguards)**

***Environmental Safeguards***

39. The project is classified as a Category **A** project, due to the complexity of environmental issues associated with waterways improvements and also the uncertainty (lack of details at project preparation) for most of the sub-projects to be implemented in the widespread project area. The policies on environment assessment (OP/BP 4.01), natural habitats (OP/BP 4.04) and physical cultural resources (OP/BP 4.11) have been triggered for the proposed operation.

40. **Applicable Environmental Category and Safeguard Polices.** The proposed project will finance road improvement and maintenance activities on the existing rural road network. No significant and long-term environmental impact is expected from rural road improvement and maintenance subcomponents. However, works on rural roads in general have impacts resulting from erosion, dust and noise control, waste disposal during construction and increased access to remote areas. Road improvements will ensure proper drainage and enhance soil stability, as well as provide greater vehicular and pedestrian safety by improving road surfaces and embankments and building bridges. Other impacts can be managed effectively with known mitigation measures.

41. The construction of the fifty (50) growth center markets will also take place in the existing market locations and no significant impact is expected from this subcomponent. However, the project will support the dredging and maintenance of two existing waterways by introducing low-impact dredging, removal of temporarily constructed earthen bunds across waterways, protection works at erosion-prone and vulnerable points along bank lines, enhancing safety by installation of navigational aids, and provision of landing facilities. The rural

waterways component may have significant environmental impacts on aquatic life, human health, agriculture, land use etc.

42. **Approach to Address Environmental Safeguard Issues.** Since the exact locations of the subprojects have not been finalized at the project preparation stage except for the first year RPM component and the roads under PBMC, it was not possible to carry out a full environmental assessment for the entire project prior to appraisal. Instead, an Environmental Management Framework (EMF) has been prepared by the borrower describing the general baseline condition and typical environmental impacts from different types of subprojects during preconstruction, construction and operation. The EMF also provides the guidelines to comply with national legislation and World Bank safeguards policies, and defines the environmental requirements needed for processing the financing of each sub-component. In addition, the EMF has laid out the procedures for screening each subproject for potential environmental impacts, and how to determine the scope of appropriate Environmental Impact Assessment (EIA). The environmental screening/assessment will take into consideration the impact on the natural habitats and will recommend appropriate measures to reduce the disturbance to the natural habitats. Although it is highly unlikely that any designated physical cultural resources will be affected by the subprojects, the EMF has provision of 'Chance find' procedures conforming to applicable legislations on heritage. In addition, the relevant Environmental, Health and Safety Guidelines of the World Bank Group/International Finance Corporation (IFC) will be applicable to the project.

43. The subprojects (waterways improvement, growth center construction and improvement of Upazila roads) which may have potential environmental impacts will be implemented from the second year of project implementation after proper environmental screening and assessment. Only subcomponents for maintenance of roads will be carried out during the first year of the project. These subprojects are expected to require only environmental screening. According to the EMF, subproject specific Environmental Management Plans (EMP) need to be prepared for all subprojects having environmental impacts and the EMPs will be an integral part of the Bill of Quantities (BOQ). The EMF also provides the Environmental Code of Practice (ECP), which will be included in all subproject civil works contracts through a set of special environmental clauses (SECs) included in the Technical Specification of the biding documents.

44. **Borrower's capacity on environmental safeguard.** The Local Government Engineering Department (LGED) has prepared the 'Environmental Assessment Guidelines for LGED Projects' with the support of the Rural Transport Improvement Project (RTIP-I) in late 2008. The guidelines aimed to provide the framework EIA for planning, implementation and subsequent operation of different sector projects undertaken by LGED. The guidelines constitute simple procedures and formats to undertake IEE and EIA of proposed projects and subprojects to identify potential negative impacts and draw up an EMP where necessary. LGED has also prepared the Environmental Code of Practice (ECP) and Environmental Supervision Manual (ESM) for the project. LGED has implemented several World Bank-funded projects and is familiar with Bank safeguard policies. An Environmental Unit headed by the Additional Chief Engineer (Maintenance) has been established in LGED. Further capacity development of the Environmental Unit is required to fully integrate environmental issues in LGED's projects and programs design and implementation. As part of the institutional development support, the

proposed project will support the strengthening of the Environmental Unit and also the training of the LGED officials and staff on environmental management.

45. **Environmental Safeguard Supervision and Monitoring.** The Project Environmental Unit headed by an Executive Engineer already set-up under the Project Management Unit (PMU) of the Rural Transport Improvement Project (RTIP-I) will continue to coordinate the environmental safeguard issues of the proposed RTIP-II. The field level engineers will be trained to supervise the regular implementation of the environmental management activities. The project will support two fulltime Junior Environment Specialist in Design and Supervision Consultancy. The specialists will prepare subproject specific environment screening/assessment report with EMP, supervise the implementation of EMP and support capacity building of the field level staff of LGED and contractor. A Senior Environment Specialist under the Management Support Consultancy will review the quality of the environmental screening/assessment and EMP.

46. The project will implement an environmental monitoring program (i) to monitor the contractor's work during project implementation in order to check contractual compliance with specified mitigation measures, and subsequently (ii) to assess the actual environmental impacts of the project over the years following completion of the various project components. The Senior Environment Specialist will design the detailed monitoring plan of the project and prepare a routine monitoring report based on the monitoring results by LGED and the Junior Consultants. In addition, the integrated performance audit will cover environmental aspects of the project and compliance with EMF/EMPs as well as World Bank safeguard policies. The Bank would also supervise the environmental compliance as part of regular implementation support missions.

47. **Grievance Redress System.** Environmental issues will be integrated into the project Suggestions and Complaints Mechanism (SCM). A Grievance Redress Committee (GRC) at Upazila level and a Suggestions and Complaints Committee (SCC) at the District level will be formed and functioned under the SCM. The Office of the Upazila Engineer and Office of the Executive Engineer at District level will serve as the secretariat of each GRC and SCC respectively. All complaints will be received at the Office of the Upazila Engineer through the Community Organizer. If the aggrieved persons are not satisfied with the local level resolution, the GRC will forward the case records to the SCC. Further recourse will be provided by the PD and at a higher level by the MLGRD&C. A decision agreed with the aggrieved person(s) at any level of hearing will be binding upon LGED. All suggestions, complaints and grievances received at SCC and at GRC will be well documented. Paragraph 56 below further describes the SCM set up.

48. **Consultation and Disclosure.** The EMF was prepared in consultation with the key stakeholders including LGED field level staffs, contractors and communities. A national consultation workshop was organized by LGED on February 7, 2012 to share the draft EMF and SMF with all the stakeholders. Consultation with communities has been made mandatory for environmental screening/assessment of each subproject. Considering the piloting experience of RTIP-I, the project will display the environmental management plan with costing in a billboard at the project site. The EMF along with Bangla version has been disclosed by the LGED on their website on December 22, 2011and hardcopies have been also available at LGED headquarters and district offices (project area). Advertisement requesting public comments has been published

in two daily Newspapers (English and Bangla). The EMF has also been disclosed in Infoshop on December 24, 2011. The updated EMF including the comments from national workshop has been uploaded in the LGED website on February 29, 2012. The subproject specific environmental screening/assessment will also be disclosed before the contract mobilization. For high risk sub-projects having full scale environmental assessment, the EIA report will be disclosed by LGED before 120 days of contract mobilization after bank review. However, the screening report/initial environmental examination report of low-risk sub-projects (like maintenance) will be disclosed before 30 days of contract mobilization.

***Social (including safeguards)***

49. Social safeguard impacts relating to land acquisition are limited to the improvement of UZR only. The other components (RPM of UZR and UNR, and improvement of UNR, GCM, Ghats and RWT) are not expected to require land acquisition. However, resettlement impacts will be assessed on a case by case basis. Some project districts have indigenous communities residing within the districts. They may experience adverse impacts, such as land acquisition, but they are also expected to be among the targeted project beneficiaries. The project is expected to trigger World Bank policies on involuntary resettlement (OP 4.12) and indigenous peoples (OP 4.10). Land acquisition and resettlement of subprojects will be financed from GoB counterpart funding.

50. **Planning approach**. Considering the framework approach for the project planning and design, LGED has developed a Social Impact Management Framework (SIMF) to guide the planning and design of subprojects on social safeguard compliance during the course of project implementation. Subproject design will be carried out on an annual basis when subproject activities will be selected and designed for financing under the project. Social screening and social impact assessment (SIA) will be carried out as part of the subproject activity design. Social management plans (SMP) including resettlement plans (RP), indigenous people's plans (IPP) and gender action plans (GAP) will be developed in line with the SIMF, where necessary. These plans will be forwarded to World Bank for review and clearance before the subprojects are accepted for financing under the project. SMPs for annual construction programs will be disclosed in country and in Bank Infoshop before contract mobilization after Bank review. The first year works are of a rehabilitation and maintenance nature. These have been designed to be carried out within existing right of way. According to the social screening carried out, no land acquisition or resettlement is expected under the first year program of rehabilitation and maintanence of UZR and improvement of UNR.

51. **SIMF**. The SIMF includes a resettlement policy framework, an indigenous people's planning framework and a gender framework. Among other issues, the SIMF provides (a) a legal framework outlining the principles and guidelines which will be used to acquire lands and mitigate the adverse impacts, including those on indigenous peoples; (b) facility for screening of social safeguard issues related to involuntary resettlement and indigenous peoples; (c) mitigation principles and planning guideline,; (d) a grievance redress procedure for the project affected persons; (e) stakeholder consultation framework; and (f) arrangement for implementation as well as monitoring and evaluation of the implementation of SMPs. The SIMF includes a guideline

and strategy for consultation with indigenous communities and development of IPP for any subprojects that impact indigenous peoples.

52. LGED has staff members in PMU who have previous experience in managing involuntary resettlement in RTIP-I. To enhance the capacity on social safeguard, LGED has conducted orientation to the Executive Engineers and Assistant Engineers of all the 26 project districts in two training workshops up to February 2012. PMU will continue similar discussion and sharing of experience on social safeguards during project implementation.

***Gender mainstreaming***

53. LGED has developed and adopted a Gender Strategy for its investment programs. Much experience was accumulated over the years in its implementation within LGED. LGED will continue to follow this strategy to mainstream gender in its operations under this project, with specific proposals to improve its implementation. They include:

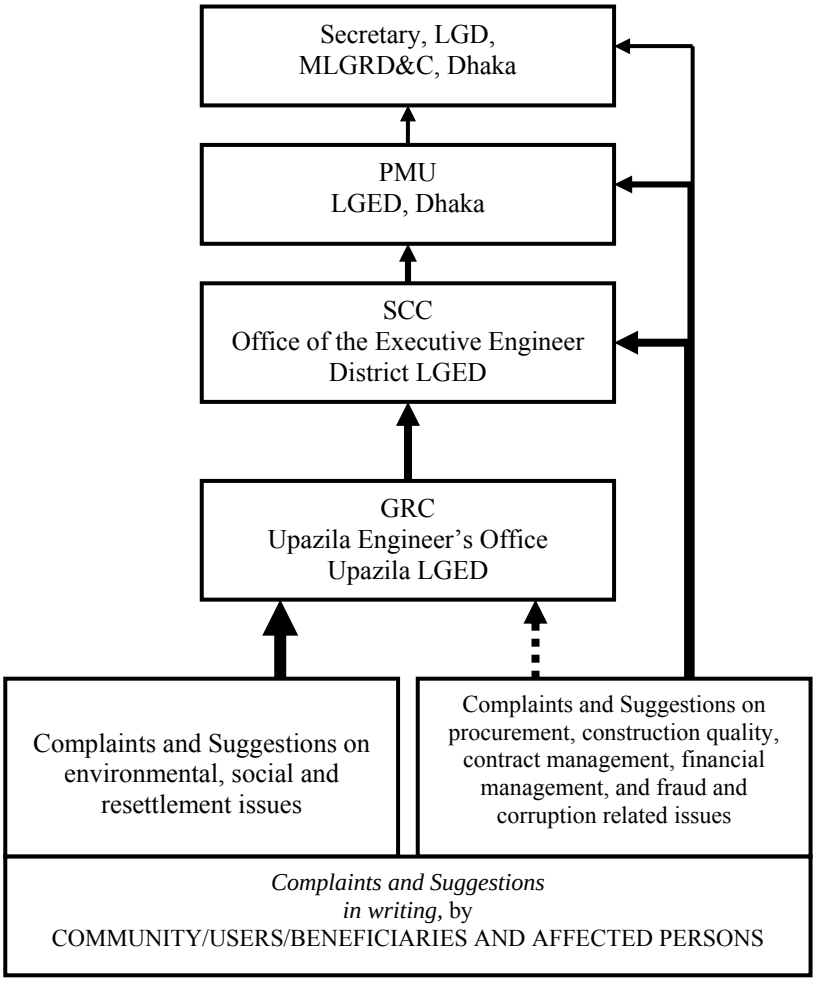
- Continuation of the employment program of rural women in off-pavement routine maintenance through the Labor Contracting Societies (LCS);
- Enhancing impact of Women Market Sections (WMS) in GCMs throught implementing a menu of specific interventions;
- Encouraging the employment of rural women thourgh arrangement of their employment in maintenance work of paved segments;
- Providing gender-related training to sensitize LGED officials and increase capacity of the Labour Contracting Socieities.

54. **Community Consultation**. Extensive discussions will be carried out with communities during the subproject planning and implementation process. If subproject screening determines an impact on IPs, LGED will conduct free, prior and informed consultations with the affected IP communities regarding their views on selection of the program activity and their participation in the subproject design and implementation. LGED is preparing a Bangla translation of the SIMF and will ensure that copies of the translated document are available at its headquarters and district and upazila offices, MLGRD&C, public libraries and local government offices in the project districts, and other places accessible to the general public. The entitlement matrix for the project will be made available to all affected persons in Bangla before civil works start.

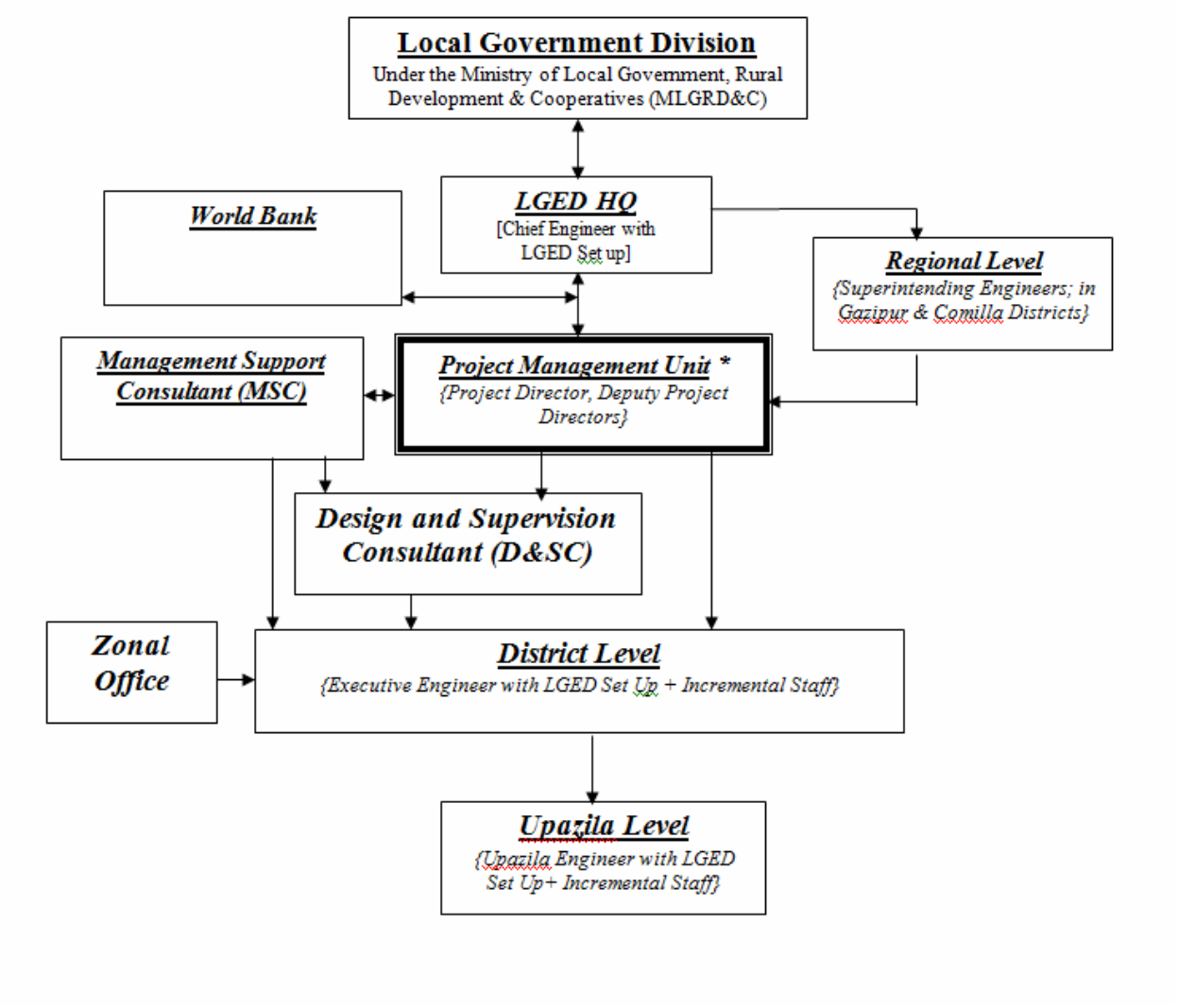
55. **Grievance Redress.** The Project will set up a Suggestions and Complaints Mechanism (SCM) for receiving complaints and suggestions from stakeholders including the affected communities. A Grievance Redress Committee (GRC) as a component of the SCM will be formed in each Upazila for resolving land acquisition and resettlement related grievances. The other component will be the Suggestions and Complaints Committee (SCC) to deal with project related issues other than land acquisition and resettlement and cases forwarded from the GRCs on resettlement complaints. Where indigenous communities are among the affected persons, the membership composition of the GRCs will take into account any traditional conflict resolution arrangements that IP communities may practice.

56. A decision agreed with the aggrieved person(s) at any level of hearing will be binding upon LGED. All suggestions, complaints and grievances received at GRC and at SCC will be documented

57. **Monitoring and evaluation**. LGED will set up an internal monitoring system to report on a quarterly basis. The PMU will be responsible for monitoring, reporting and evaluation. Independent reviews of the LGED land acquisition and resettlement process will be carried out at regular intervals through the RTIP-II integrated performance audit procedure using a sample of 15 percent of the subprojects. The independent monitoring will be conducted twice a year. In addition, an independent mid-term review and end-term impact evaluation of land acquisition and resettlement will be carried out for each construction phase.

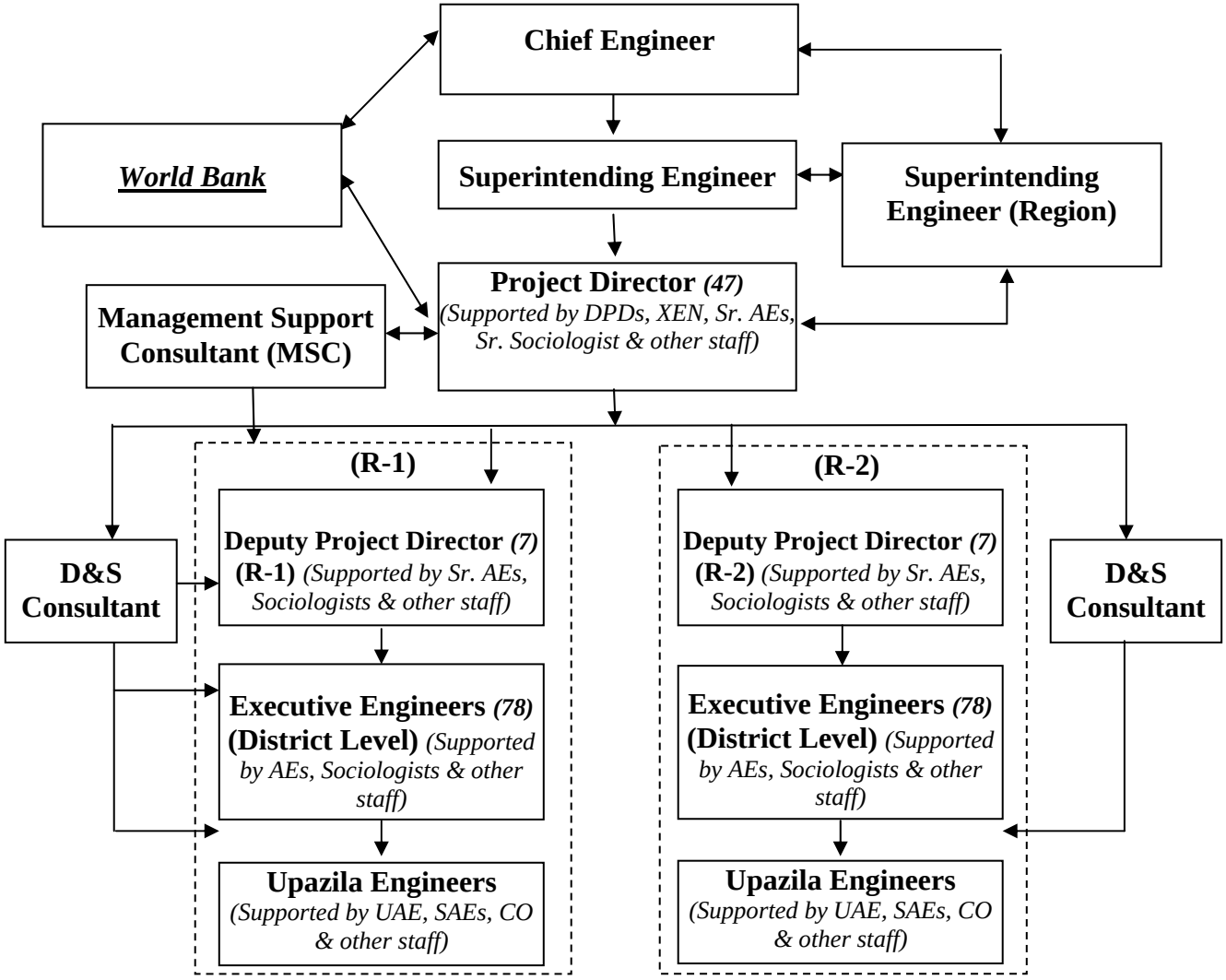


## Project Organizational Chart




**NB: While the Institutional Strengthening and Governance sub-component will be under the Project Management responsibility of the PMU, the oversight and direction of the planned activities and external assistance will be the responsibility of the LGED Management Improvement Plan Steering Committee, headed by an Additional Chief Engineer of LGED.*

# (LGED) Project Management Organogram



## Annex 4: Operational Risk Assessment Framework (ORAF)

**Bangladesh: Second Rural Transport Improvement Project (P123828)**

| Project Stakeholder Risks | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Stakeholder Risk** | Rating | Substantial | | | | | | | | |
| Description:<br><br>LGED's planning framework does not have an adequate approach for more systematic and rationale distribution of resources.Political influence over selection of sub-projects and selection of contractors is a possible challenge and can lead to biased selections andpoor performance. | **Risk Management:**<br>Selection of projects based on an approved selection methodology. | | | | | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2015 | Frequency: | Status: In Progress | | | | |
| | **Risk Management:**<br>Strengthen information on project provided to stakeholders including on project website | | | | | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: In Progress | | | | |
| | **Risk Management:**<br>Adopt and operationalize Suggestion and Complaint Mechanism which was built based on consultation with stakeholders and the experience of RTIP and other projects in Bangladesh. | | | | | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: In Progress | | | | |
| Implementing Agency (IA) Risks (including Fiduciary Risks) | | | | | | | | | | |
| **Capacity** | Rating | Substantial | | | | | | | | |
| Description:<br><br>LGED is unable to effectively manage the project given the large number of contracts spread over 26 districts (40% of the country area).<br><br>LGED's decentralized nature makes project monitoring difficult.<br><br>LGED does not have sufficient IT infrastructure to implement the project. IT infra-structure is improving in Bangladesh but does not cover the entire country yet. | **Risk Management:**<br>LGED is one of the strongest counterparts in Bangladesh and satisfactorily implemented the RTIP-I project. However, in order to balance the workload and possible strain on capacity during implementation of RTIP-II, the project implementation plan will include phasing of various components in order to accommodate project size and geographic scope. For example, the first year of implementation will only include periodic maintenance works, and road improvement contracts will not be initiated until the second year of implementation. | | | | | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Mar-2012 | Frequency: | Status: Completed | | | | |
| | **Risk Management:**<br>Support rolling-out of transitional Unified Financial Management System (UFMS) to all projects, and implementation within 3 years of a new comprehensive FMS linked with the planned Integrated Decision Support System for the whole LGED. Support modernization of IT systems and infrastructure including extension for coverage of all major field offices and HQ. (Current due date refers to UFMS) | | | | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| LGED does not have adequate capacity in financial management. Currently LGED does not have high level staff with professional financial management skills.<br><br>Despite LGED's experience in implementing IDA funded projects and developing Environmental Impact Assessment Guidelines and Environmental Code of Practice with the assistance of RTIP, LGED does not have adequate capacity development support to develop its own staff skill on environmental assessment and monitoring and also to integrate environmental safeguard in other operations. | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Mar-2013 | Frequency: | Status: In Progress |
| | **Risk Management:**<br>Ensure the project-centered Financial Information System operational before the project starts. | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: In Progress |
| | **Risk Management:**<br>Fully implement a Procurement Management Information System which applies a Procurement Risk Mitigation Framework, implements e-procurement, and closely supervises contract management. | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 03-Jan-2013 | Frequency: | Status: In Progress |
| | **Risk Management:**<br>Continued capacity building for the environmental unit established in LGED, including establishment of an effective EMIS and updated training program for its staff and orientation program for the contractors. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 30-Jun-2015 | Frequency: | Status: Not Yet Due |
| **Governance** | Rating: Substantial | | | | | |
| Description:<br><br>Due to the large geographic scope of the project, lack of IT capacity, and decentralized nature of LGED, project management does not have sufficient oversight or accountability. | **Risk Management:**<br>Develop and implement a communication strategy to disseminate project information including seeking public feedback through Suggestion and Complaint Mechanism. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Dec-2013 | Frequency: | Status: Not Yet Due |
| | **Risk Management:**<br>Strengthen oversight function by establishing Integrated Decision Support System and implementing effective LGED-wide IT network to (inter alia) support project monitoring functions. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Dec-2015 | Frequency: | Status: Not Yet Due |
| | **Risk Management:**<br>Operationalize the M&E framework established under RTIP-I, including - computerization of the M&E system in all project field offices. | | | | | |
| | Resp: Client | Stage: Imple | Recurrent: ☐ | Due Date: 03-Aug-2015 | Frequency: | Status: In |

| | | | | | | |
|---|---|---|---|---|---|---|
| | mentation | | Date: | | Progress | |
| **Risk Management:** Bank review of audit reports and follow up on actions taken by LGED to address audit recommendations. | | | | | | |
| Resp: Bank | Stage: Implementation | Recurrent: ☐ | Due Date: 03-Aug-2017 | Frequency: | Status: Not Yet Due | |
| **Risk Management:** Procurement of supervision and management consultants at advanced stage before Board approval. | | | | | | |
| Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 20-Sep-2012 | Frequency: | Status: In Progress | |
| **Risk Management:** Carry out integrated performance audit (date refers to inception round). | | | | | | |
| Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 30-Nov-2013 | Frequency: | Status: Not Yet Due | |

## Project Risks

| | | | | | | |
|---|---|---|---|---|---|---|
| **Design** | Rating: Moderate | | | | | |
| Description: Poor accessibility of some areas makes project implementation difficult to monitor given the project's wide geographic scope and LGED being heavily decentralized. Road safety measures will not be properly addressed in road designs. Project faces difficulties in implementation of dredging component because LGED has no dredging experience. | **Risk Management:** Further decentralize supervision consultants and add performance criteria in contract to provide incentives for close supervision (date refers to contract signing). Technical audit of the works will be included as part of the integrated performance audit. | | | | | |
| Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: Not Yet Due | |
| **Risk Management:** Recruit IWT expert to oversee rural waterways component. | | | | | | |
| Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 15-Sep-2013 | Frequency: | Status: Not Yet Due | |
| **Risk Management:** International expert will be hired to train LGED in road safety audits of the design to ensure road safety is addressed. | | | | | | |
| Resp: Client | Stage: Imple | Recurrent: ☐ | Due Date: 30-Jun-2017 | Frequency: | Status: Not Yet | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | mentation | | Date: | | Due |

| **Social and Environmental** | Rating | Substantial |
|---|---|---|

Description:

Social: LGED has experience in dealing with land acquisition and resettlement with similar projects including RTIP-I. However, this has included a number of difficulties in the valuation of acquired structures, delays in payments and disputes on acquired land during RTIP-I implementation.

Lack of precise assessment of land acquisition and resettlement impacts creates difficulty in implementation of resettlement plans and aggrieve the affected persons. LGED has the experience of dealing with land acquisition and resettlement in similar other projects including RTIP-I, yet it has experienced a number of difficulties including valuation of acquired structures, delay in payment and disputes on acquired land during RTIP-I implementation.

Project components foreseen to not require land acquisition and resettlement may need additional private lands during implementation.

Delays in implementation of resettlement action plans hamper project execution.

Environmental: Despite LGED's previous satisfactory performance to date on implementation of environmental action plans, LGED's does not have adequate capacity to implement environmental management plans under RTIP-2.

Delay in the effective implementation of resettlement action plan jeopardizes project completion. Implementation of resettlement action plan under RTIP1 has been marginally

**Risk Management:**

Need based consultant will be provided to the Environmental Management Unit to build further capacity in LGED. The supervision and management consultant teams include specialists with expertise in land acquisition, resettlement and environmental impact management to provide technical and management support to LGED.

| Resp: | Client | Stage: | Preparation | Recurrent: ☐ | Due Date: | 30-Jun-2013 | Frequency: | Status: | In Progress |
|---|---|---|---|---|---|---|---|---|---|

**Risk Management:**

Conduct an integrated performance audit to provide periodic evaluation of implementation of all project aspects. Supervision consultants, management consultant and Bank missions will all work together for effective monitoring of the implementation of environmental and social management plans.

| Resp: | Client | Stage: | Preparation | Recurrent: ☐ | Due Date: | 31-Dec-2017 | Frequency: | Status: | In Progress |
|---|---|---|---|---|---|---|---|---|---|

**Risk Management:**

Extensive consultations were used to prepare Social Impact Management Framework and Environmental Management Framework, which have been publicly disclosed. Social and environmental management plans will be prepared based on precise road design and land acquisition plans based on real-time engineering survey data. road redesign and land acquisition plans will be shared with the community for greater agreement. LA process and valuation will be closely monitored by LGED district offices

| Resp: | Client | Stage: | Implementation | Recurrent: ☐ | Due Date: | 31-Dec-2015 | Frequency: | Status: | In Progress |
|---|---|---|---|---|---|---|---|---|---|

**Risk Management:**

Road safety audit during engineering design phase.

| Resp: | Client | Stage: | Implementation | Recurrent: ☐ | Due Date: | 31-Oct-2013 | Frequency: | Status: | Not Yet Due |
|---|---|---|---|---|---|---|---|---|---|

**Risk Management:**

Scale-up road safety program piloted under RTIP-1.

| Resp: | Client | Stage: | Preparation | Recurrent: ☐ | Due Date: | 31-Dec-2013 | Frequency: | Status: | In Progress |
|---|---|---|---|---|---|---|---|---|---|

**Risk Management:**

Safety designs will be verified by LGED-trained engineers assisted by international expert.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| satisfactory.<br><br>Road safety deteriorates as a result of improved roads and faster speed of vehicles.<br><br>LGED's documents for environmental and environmental assessment are not updated adequately from the RTIP-1 project. Under RTIP, LGED developed its own documents for environmental assessment and an Environmental Unit. | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Oct-2013 | Frequency: | Status: Not Yet Due |
| | **Risk Management:**<br>Reporting and documentation system will be strengthened. Monitoring of Environmental Screening/Assessment and implementation of Environmental Management Plan (EMP) and Social Impact Management Framework (SIMF) will be strengthened. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 30-Jun-2013 | Frequency: | Status: Not Yet Due |
| **Program and Donor** | Rating | Low | | | | |
| Description:<br><br>Duplication or inconsistencies between various projects financed by development partners.<br><br>Informal coordination exists among DPs related to project area and other sectoral issues. | **Risk Management:**<br>Geographical separation of donor-funded projects. | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 02-Apr-2012 | Frequency: | Status: Completed |
| | **Risk Management:**<br>LGED will lead coordination of development partners in assisting implementation via the FORMIP of ORA recommendations. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Dec-2017 | Frequency: | Status: Not Yet Due |
| **Delivery Monitoring and Sustainability** | Rating | High | | | | |
| Description:<br><br>Insufficient resources for maintenance create a risk of lack of sustainability of investments executed under the project. While resources for maintenance have significantly increased in the past from 0 to 25 percent in 2010, however, only 23 percent of needs were covered in 2011.<br><br>Local small contractors in rural areas have difficulty satisfying quality assurance of the contracts because they are so widely scattered under the project. | **Risk Management:**<br>Maintenance policy to be submitted to Cabinet by negotiations. Restructuring of project to focus more on maintenance if maintenance targets agreed under the project are not achieved. Intensive capacity building in road maintenance planning, practices, operations and monitoring to be provided during project to responsible LGED field and HQ units (due date refers to Maintenance Policy submission to the Cabinet). | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 02-Apr-2012 | Frequency: | Status: Completed |
| | **Risk Management:**<br>Scale-up the use of performance-based maintenance contracts piloted under previous Danida-funded project. | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Oct-2015 | Frequency: | Status: In Progress |
| | **Risk Management:** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Provide adequate training on quality assurance to local contractors prior to the start of the works. | | | | | |
| | Resp: Client | Stage: Implementation | Recurrent: ☐ | Due Date: 30-Apr-2013 | Frequency: | Status: Not Yet Due |
| | **Risk Management:** Prepare quality assurance guidelines in local language. | | | | | |
| | Resp: Client | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2013 | Frequency: | Status: Not Yet Due |
| | **Risk Management:** Performance assessment are included in the contracts of supervision consultants. | | | | | |
| | Resp: | Stage: Preparation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: In Progress |
| | **Risk Management:** Engage a Project Management Consultant to support LGED in ensuring quality control. | | | | | |
| | Resp: | Stage: Implementation | Recurrent: ☐ | Due Date: 31-Dec-2012 | Frequency: | Status: Not Yet Due |

| Overall Risk | |
|---|---|
| **Preparation Risk Rating:** **Substantial** | **Implementation Risk Rating:** **Substantial** |
| Description:<br>The risk rating for the project is assessed as substantial to reflect the overall weak governance environment in the country and complexity of the project which will cover 26 districts and will aim to upgrade, rehabilitate and maintain a large portion of the LGED road network and will support institutional strengthening agenda for the LGED. Unbiased selection of roads is a major challenge and is expected to be mitigated by an agreed selection methodology. The risks of stretched and limited capacity of LGED to implement the project in 26 districts, potential risks with land acquisition and governance risks add to the challenge. Prior experience of the LGED in satisfactorily implementing the RTIP-I and agreed measures are expected to mitigate risks during implementation. | Description:<br>Risk during implementation is assessed as substantial to reflect the risks of stretched and limited capacity to implement the project in 26 districts, potential risks with land acquisition and governance risks. Prior experience of the LGED in satisfactorily implementing the RTIP-I and agreed risk mitigation measures are expected to mitigate implementation risks. |

## Annex 5: Implementation Support Plan
## Bangladesh: Second Rural Transport Improvement Project (P123828)

### A. Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) provides the support required for implementation of all mitigation measures identified in the ORAF in the three following areas: (i) institutional; (ii) performance and quality; and (iii) governance, in order to insure all major risks are addressed. The design of the project contains safeguards against each of these risks. The ISP is designed to review and ensure that those safeguards are effective and to reinforce them where necessary. The ISP is also designed to enhance LGED's capacity in a range of technical and specialized areas. The ISP will be undertaken by World Bank staff and is based on four major principles: (i) continual high level policy dialogue with LGED on institutional development and maintenance policy; (ii) frequent local level and field based supervision of project activities including consultation with RTIP-II beneficiaries, (iii) consistent review of fiduciary procedures and controls within LGED.

2. LGED has a long history of successful implementation of institutional development plans with the support of development partners including the World Bank through three projects in the rural road sector. The Operational Risk Assessment (ORA) carried out in 2008-2009 identified constraints and opportunities in implementing LGED programs in the sector and provided the analytical underpinning for the Institutional Strengthening and Governance component of the proposed RTIP-II. The ORA represents an agreed and shared approach to institutional development issues. LGED has subsequently established an ORA-based Management Improvement Plan (MIP) to guide a wide range of medium-term policy and institutional reforms and interventions which are being supported by RTIP-II and other donor-assisted operations. The project team will meet regularly with and advise the MIP working groups responsible in the LGED for designing and overseeing action plans to implement the MIP. This includes building an effective partnership based on the discussion on challenges, solutions, and sharing best practices as well as international experience.

3. Implementation of the project in a wide area and scattered project activities will be challenging. It is estimated that about 500 contracts will be implemented over 26 districts[14]. Based on the experience of RTIP-I, several actions have been agreed which will facilitate implementation support:

- Monitoring capacity at PMU level will be strengthened with the support of a Management Support Consultant (MSC). While LGED has demonstrated its capacity to collect data under RTIP-I, the MSC will strengthen the capacity to analyze the data and prepare recommendations as well as manage and monitor the implementation of these recommendations.
- Team leaders of Supervision Consultants will be decentralized making them closer to the civil works programs and the supervision teams on the ground for better monitoring and coordination.

[14] About 800 contracts were executed under the RTIP-I.

- The Integrated Performance Audit (IPA) provided under the project will periodically review project implementation. It will also review compliance with implementation arrangements, particularly with World Bank procurement, financial management and safeguards policies. The IPA will carry out a random review of a sample of contracts.
- The project planned to initially use the Unified Financial Management System (UFMS) or an equivalent project-based system for improved financial management reporting, pending establishment of a new comprehensive, networked and transaction-based Financial Management System (FMS) in the second half of RTIP-II project term.
- A contract management system will be developed under the project as part of the first steps towards the proposed Integrated Decision Support System (IDSS).
- IT-ICT-MIS capacity will be strengthened with project support underpinning the improvements in financial and contract management.

4. Field visits will be used to verify that roads have been selected according to the agreed selection criteria for the type of works, as outlined in the Implementation Manual. The Bank team will conduct due diligence on relevant documentation, data and field based conditions to ensure compliance with the selection criteria. Divergence from the selection criteria will be immediately discussed with LGED, a recourse to rectify the situation will be agreed upon and implemented within the overall time schedule.

5. Each field visit will involve focus group conversations with the project beneficiaries to gauge project impacts and beneficiary satisfaction. This information will be used to continually improve project practice.

6. The Bank team will undertake regular and comprehensive fiduciary implementation support of LGED management procedures. This will include thorough reviews including the assessment of interim financial management reports. Particular attention will also be given to the findings of the annual procurement post review of contracts, financial audit and integrated performance audit and implementation of recommendations provided in these reports. Previous experience under RTIP-I in regards to procurement and financial management irregularities have illustrated that the Bank and LGED together are able to work as a team to address and correct deficiencies and this spirit is likely to continue in future.

## B. Implementation Support Plan

7. The Bank's supervision team will include two co-Task Team Leaders, Washington-based and country-based, and country-based fiduciary, procurement and safeguards staff. Additional technical support will be provided in the following areas:

8. **Technical support for Component A**: The Bank's task team will include
   a) A country-based highway engineer to review the adequacy of the road design and specifications, the quality of the works and performance of the contractors and supervision consultants. The specialist will perform site supervision and spot-checks of construction and completed works. This will require on average two missions and an input of four weeks per year through the life of the project.

b) A specialist of performance-based maintenance contracts to assess the capacity of LGED, supervision consultants and contractors to implement this innovative type of contract. The specialist will perform site supervision and spot-checks of repair works and compliance with maintenance standards. This will require on average two missions and an input of four weeks per year through the life of the project.
c) An inland water transport specialist to review the feasibility of the two pilots proposed to be executed under the project, technical specifications and contract execution arrangements. The specialist will perform field visit at preparation stage and site supervision and spot-checks of dredging works. This will require a total of eight missions and a total input of 16 weeks through the life of the project.
d) A transport economist to review economic justification of annual programs proposed to be funded under the project, use of agreed criteria to select the roads and ex-post economic evaluation of the project. This will require on average one mission and an input of one week per year during four years and a two-week mission at project completion.
e) A gender specialist to assess mainstreaming of gender in LGED programs and the proposed project. The specialist will review integration of gender in the selection process of projects, capacity building provided to women operators in the Women Market Sections, employment of women in civil works contracts and effectiveness of suggestions and complaint mechanism for women. The specialist will carry out field visits for consultation with women beneficiaries of or affected by the project. This input will require on average two missions and an input of three weeks per year through the life of the project.

9. **Technical support for Component B:** The Bank's task team will include an institutional development specialist. The specialist will meet periodically with the LGED's MIP Steering Committee and the MIP working groups responsible for designing and overseeing action plans to implement the MIP, will provide references to best practices, will evaluate quality of technical advisory services provided to LGED and will assess progress in implementation of the component and impact. This input will require on average two missions and an input of four weeks per year through the life of the project.

10. **Technical support for Component C:** The Bank's task team will include a road safety specialist with international experience. The specialist will follow up periodically with the LGED's counterpart at the PMU, DSC and MSC teams to follow up on the two main activies envisaged under this component: (i) support for road safety improvement on project roads; and (ii) strengthening LGED capacity in rural road safety. It is important to ensure safety of roads will be improved and maintained under the Accessibility Improvement Component of the Project. In addition the road safety specialist will monitor the progress to support LGED-wide staff training in road safety engineering and practices as planned.

11. ***Financial Management (FM):*** A financial management specialist based in the Bank's office in Dhaka will conduct two or more FM supervision missions every year throughout the life of the project. FM supervision will cover, in addition to the operational status and capability of financial management systems, quality of financial reports, reconciliation of financial data,

capacity of FM staff, review of audit reports and follow up on implementation of recommendations.

12. ***Procurement supervision***: A procurement specialist based in the Bank's office in Dhaka will be a member of the project team throughout the project. During project implementation, the procurement specialist will provide due diligence services for procurement documents and will join the implementation support missions. The frequency of missions is expected to be twice per year. In addition to the prior review due diligence to be carried out by the Bank team, procurement post reviews are to be carried on at least 15 percent of the contracts subject to post review. As a minimum, one post review report which will include physical inspection of sample contracts including those subject to prior review will be prepared each year and not less than ten percent of the contracts will be physically inspected. The specialist will review the red flags required to be checked for all procurement under the project; implementation of the procurement risk mitigation framework; and implementation of recommendations provided in the various audit reports.

13. ***Environmental Safeguards supervision***: An environmental specialist based in the Bank's office in Dhaka will be a member of the project team throughout the project. Besides supervision of compliance with environmental safeguards, the specialist will provide support in conjunction with the LGED environmental management unit on implementation of the EMF. The specialist will assess performance of project management consultants and supervision consultants, discuss recommendations provided in the integrated performance audit and monitor implementation of recommendations.

14. ***Social Safeguards supervision***: A social development specialist based in the Bank's office in Dhaka will be a member of the project team throughout the project. Besides supervision of compliance with social safeguards, the specialist will provide support to LGED on implementation of the SIMF, IPPs and RAPs. Field visits of the works sites will include consultations with persons affected by the project and assessment of the grievance redress mechanism. The specialist will assess performance of project management consultants and supervision consultants, discuss recommendations provided in the integrated performance audit and monitor implementation of recommendations.

## III. Implementation Main Focus

**Table 5.1: Main Focus of the Implementation Support Over the Life of the Project**

| Time | Focus | Skills Needed | Resource Estimate |
|---|---|---|---|
| First twelve months | Quality of implementation: Ensure that preparation of environmental screening reports, EIAs/EMPs, RAPs for the second-year activities has the required quality; gender aspects are implemented; implementation of resettlement action plans complies with World bank safeguard policies; information is disclosed on the project website; capacity has been developed for management of performance-based maintenance contracts; quality assurance plans in civil works contracts are in place; project | Procurement, financial management, environment, social development, performance-based maintenance contract, institutional development, transport economics, inland water transport, highway engineering, gender | 57 sw |

| Time | Focus | Skills Needed | Resource Estimate |
|---|---|---|---|
| | management consultants and supervision consultants are in place. A specific attention will be paid to districts which do not have experience of World Bank procedures and policies.<br>Governance and accountability: Ensure that project management systems (financial management, contract administration) are in place; integrated performance audit is launched; Random review of check-list of red flags provided with bid evaluation reports.<br>Review of application of agreed criteria for selection of second-year roads.<br>Institutional development:<br>Review of terms of reference for consultants selected to implement activities in the institutional development component. Review of LGED consultant selection reports. Review of consultants' Inception Reports. | | |
| 12-48 months | Quality of implementation:<br>Review quality of works, road safety component, compliance with fiduciary and safeguards policies, implementation of gender aspects; quality assurance plans in civil works contracts are in place;<br>Ensure that preparation of environmental screening reports, EIAs/EMPs, RAPs for subsequent years activities has the required quality.<br>Review performance of districts and actions agreed to achieve good performance including reallocation of resources towards good performing districts.<br>Review of performance of project management consultants and supervision consultants.<br>Ensure that socio-economic impact and evaluation survey is launched ahead of project completion.<br>Review monitoring indicators, implementation performance and achievement of objectives.<br>Governance and accountability:<br>Integration of project in e-Procurement system; implementation of resettlement action plans complies with World bank safeguard policies; information is disclosed on the project website; integrated performance audit is carried out; recommendations of integrated performance audit, financial audit and ex-post procurement reviews are implemented.<br>Institutional development:<br>Review implementation of institutional component and TA/consultants' deliverables; compliance with maintenance policy; quality of advisory services provided as part of the institutional development component; and | Highway engineering, procurement, financial management, environment, social development, performance-based maintenance contract, institutional development, transport economics, inland water transport, gender, M&E | 259 sw |

| Time | Focus | Skills Needed | Resource Estimate |
|---|---|---|---|
| | sustainability factors / outlook. | | |

Skills Mix Required

| Skills Needed | Number of Staff Weeks | Number of Trips | Comments |
|---|---|---|---|
| Task management Washington-based | 60 | 10 | International |
| Task management country-based | 80 | 10 | Field-based |
| Procurement Specialist | 30 | 10 | Field-based |
| Financial Management Specialist | 20 | 10 | Field-based |
| Environment specialist | 20 | 10 | Field-based |
| Social development specialist | 20 | 10 | Field-based |
| Gender specialist | 15 | 10 | Field-based |
| Performance-based maintenance contract specialist | 20 | 10 | Regional trip |
| Highway engineer | 20 | 10 | Field-based |
| Inland water transport specialist | 16 | 8 | International trip |
| Transport economist | 5 | 5 | International trip |
| Institutional Development Specialist | 20 | 10 | International trip |

## Annex 6: Governance and Accountability Action Plan
## Bangladesh: Second Rural Transport Improvement Project

### Objective

1. The Governance and Accountability Action Plan (GAAP) for the proposed Bangladesh Rural Transport Improvement Project (RTIP-II) is designed to improve the overall risk management, enhance efficiency and development impact and ensure that allocated resources are spent for the intended purpose and directed to the beneficiaries. The GAAP, if properly implemented, will contribute to enhancing efficiency of the institutional organization and performance of the project as well as strengthening the rural roads sector governance. It will remain a living document and will be updated as issues emerge or get resolved and additional mitigation measures are developed during project implementation.

### GAAP Methodology

2. The GAAP has been developed jointly by LGED and the Bank. The GAAP is based on an assessment of the governance risks, including fraud and corruption, in Bangladesh's rural road sub-sector and overall country governance context. It is based on the findings of the Operational Risk Assessment for LGED carried out in 2008 and 2009, the World Bank's Transport Sector GAAP Guidance Note, the Bank's Strategy for improving governance in Bangladesh laid out in its 2011-2014 Country Assistance Strategy, and the World Bank Integrity Vice Presidency's Report "Curbing Fraud, Corruption, and Collusion in the Road Sector." INT's (Institutional Integrity Department) preventive services unit was consulted in defining this project's GAAP. The GAAP builds on a number of good governance practices initiated in LGED under the recently completed Bank funded RTIP-I as well as good practices launched and promoted by LGED with its own resources. In addition, consultations with project beneficiaries were undertaken to seek their views on how to improve beneficiary participation in project implementation and transform a Grievance Redressal Mechanism into a more comprehensive Suggestion and Complain Mechanism (SCM), one of the governance measures. A new and improved SCM would open opportunities for the project stakeholders to participate in the monitoring process of all aspects of project implementation that has been already designed with mutual consultation.

### Country Context

3. Bangladesh has historically scored poorly on international governance indices, albeit with modest progress in recent years. There are entrenched difficulties in improving public sector performance. The Government of Bangladesh's efforts to bolster its legal framework to counter corruption, including the empowerment of an Anti-Corruption Commission, and joining the UN Convention against corruption have yet to yield measurable gains. Institutions of accountability are weak and country systems to deter corruption such as asset statements or prosecution of corruption cases are rarely enforced. These capacity and governance challenges in Bangladesh's public sector, combined with the susceptibility of civil works projects worldwide to fraud and corruption, emphasize the importance of a GAAP that harnesses a range of sound measures to

strengthen governance in the rural road sub-sector and prevent and mitigate corruption at the project level.

4. The Bank's strategy for improving governance in Bangladesh, laid out in its 2011-2014 Country Assistance Strategy, focuses on developing accountability mechanisms in public sector operations, especially through increased transparency. The Bank seeks to align with Government priorities in developing the means of accountability, especially strengthening of public financial management, support for local government, use of information and communication technology (ICT) and the adoption of a Right to Information (RTI) regime. In particular, the Bank is working with the Government to improve budgeting practices among line agencies in conjunction with enhanced accountability mechanisms. It is working to increase the role and quality of oversight of public finances by the Parliamentary Accounts Committee, improve capacity of the Comptroller and Auditor General's Office, and promote greater public understanding of public financial management to build more informed demand and ability to hold Government accountable. The Bank's strategy also focuses on improving public service delivery, a key component which is fostering greater accountability to recipients of services including through a strengthened role for local government. The Bank supports the Government's efforts to establish functioning RTI regime, including building capacity in all agencies to provide information more fully and efficiently. The Bank also continues to emphasize the importance of building demand for good governance among civil society. This, in turn, requires engaging with the civil society and monitoring the performance of the public sector.

**LGED and Good Governance Practices**

5. Worldwide, the transport sector is associated with governance risks, including fraud and corruption. Some of the key evidences of these risks include low competition in bidding processes, unsatisfactory quality of works, and large cost and time overruns. By their very essence, transport infrastructure projects also have direct impacts on local communities due to land acquisition and construction activities in inhabited areas, which require careful management.

7. Following some incidences of inappropriate bidding practices in LGED as identified in post reviews as well as allegations of poor quality and unfinished road works, LGED and the Bank jointly carried out the ORA of LGED in 2009. The ORA assessed fiduciary and operational risks in LGED's management of projects, assets and other resources, and in LGED's oversight function. The study highlighted a gap between LGED's advocacy of project management tools, systems and processes and weaknesses in planning, contract management and overall oversight of fiduciary activities, reporting back from field to HQ, and lack of monitoring. Although information and communication systems are relatively progressive in LGED compared to other government departments, the use of many different systems, lack of integration, unsustainable funding of personnel through donor-funded projects and inadequate internal controls make it difficult for LGED to gather and consolidate reliable information and do not facilitate reporting and control. LGED prepared a Fiduciary and Operational Risk Management Improvement Plan (FORMIP) that (i) prioritizes options which are realistic and available to effectively minimize (and where possible, eliminate) the major operational risks identified, and (ii) identifies options

for mechanisms which (drawing on this ORA as a 'baseline') will facilitate efficient future monitoring of operational risks in LGED and the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C). The Institutional Component of this proposed project and the GAAP heavily build on FORMIP.

8. LGED is one of the largest public sector organizations in Bangladesh entrusted for planning and implementation of local level rural urban and small scale water resources infrastructure development programs. LGED works closely with the local stakeholders to ensure people's participation and bottom–up planning in all stages of project implementation cycle. LGED known as the most efficient government organization in Bangladesh is highly committed to good governance as it is defined in its statement of mission. "Development and management of local infrastructure for increasing farm/non-farm production, generating employment, improving socio-economic condition, promoting local governance, reducing poverty and acting as agent of change at the local level".

9. LGED's commitment to good governance is demonstrated through a number of good practices initiated under the recently completed Bank-funded RTIP-I as well as other initiatives launched and promoted by LGED on its own. Among the most significant governance initiatives are (i) a well developed website with sufficient information on the organization, projects, procurement plan, notification of awards, etc. (ii) a list of debarred contractors on the website, (iii) recruitment of an external engineering firm to conduct regular technical monitoring of rural roads; (iv) project monitoring database with information on the physical progress, and (v) on-going revision of LGED's organogram and organizational functions.

10. LGED is strongly committed to promoting e-governance through development of its own long term ICT and MIS blueprint incorporating all the different functional needs of different departments and projects, so as to facilitate holistic planning for using ICT as a decision support tool. This blueprint would assess the existing systems such as Uniform Financial Management System (UFMS), and make recommendations on next steps. In December 2007, an IT and MIS Needs Assessment study of LGED was carried out with ADB support. The report suggested developing a web-based MIS system for meeting the monitoring and evaluation (M&E) needs of LGED by defining a set of key performance indicators. The report provided details of the hardware required for the suggested system along with qualifications for the posts of ICT and MIS Division but only from the limited project M&E point of view.

11. The likely outcome of the ICT and MIS blueprint would be development / procurement of an integrated, comprehensive, enterprise wide, workflow based, decision support system (IDSS), which is both modular and scalable and based on web technologies. The IDSS would be expected to cover the following:

- On-line Progress Monitoring System(PMS)
- Online data sharing with field level by deploying File Transfer Protocol(FTP) service
- Transactions Processing System capturing all day to day transactions (financial) and data (non-financial) at the lowest level;
- Spatial Interface: Geographical Information System (GIS)
- Non Spatial Interface: Management Information System (MIS)

- Monitoring and Evaluation System (M&E) covering the key performance indicators for input, outputs and outcome monitoring. RHD's Central Monitoring System (CMS) might be adapted to deliver some of these functions, after customization for LGED's needs. The IDSS may also contain:
    i) Financial Management;
    ii) Standard Schedule of Rates (SSR) which generates the Bill of Quantities (BOQ);
    iii) Human Resource Database;
    iv) E-Procurement;
    v) Centralized Contractors Database (covering all contractors who have executed or are executing any project for LGED) to facilitate contractors' performance evaluation, comparison and monitoring.

**Governance risks in LGED and RTIP-II**

12. The governance assessment during the project preparation has identified risks in the following areas of governance at the project level for which a number of mitigation measures are proposed in the GAAP Matrix:

- *Allocation and use of resources in rural road maintenance and asset management*. LGED management has realized that allocated resources are often spent by local governments on development and major improvement works rather than maintenance works in some districts.
- *Internal integrity*. Integrity mechanisms (e.g., public information disclosure, vigilance, grievance redress mechanism), while in place, are still not fully used and need substantial improvement to demonstrate their effectiveness.
- *Transparency in Procurement Process and Contract Management*. During 2004-06 a few cases of inappropriate bidding practices including possible indications of collusion/fraud were identified in RTIP by the Bank and also by LGED. Subsequently, LGED debarred 20 firms under RTIP. For prior review contracts (~ 150 contracts, six percent of 2,700 RTIP contracts and 20 percent of project financing), the Bank consistently applied its due diligence as part of the review, and for contracts below the prior review limit (94 percent of RTIP contracts), procurement post reviews were conducted consistently every year. The post-reviews of FY10/11 revealed a few instances of poor practices but not of significant nature to call for Bank's remedial measures. There has been no INT investigation under the project Over the years, the RTIP unit of LGED, demonstrated better performance compared with LGED's other units. About 60 percent of LGED Upazila offices have at least one procurement trained staff.
- *Inadequate financial management*. There have been outstanding audit issues dating back to 2004 which during the preparations of the RTIP-II were addressed and resolved fully. To overcome the inconsistencies on accounting data and financial reporting prior to the closure of the recently completed RTIP project, an Accounting Specialist was hired to reconcile the accounting data of all the cost centers, including PIU expenses. The full roll out of the Unified Financial Management System (UFMS) which was planned under RTIP-I, has not yet taken place. As such, a project specific computerized accounting system has been agreed to be set up for RTIP-II. Timely submission of FMRs has also been an issue under RTIP. Fund flow and financial reporting arrangement have been modified in the RTIP-II so that this is not repeated.

- *Citizen oversight*. RTIP-I has not performed well on social aspects where efforts were needed to involve community stakeholders in road selection and female beneficiaries in the management of the Road Growth Center Market component. It has also been noted that there were no grievances of complaints reported which raises an issue of a poorly functioning Grievance Redressal Mechanism and/or issue of poorly disclosed project information. In RTIP-II, therefore, a suggestion and complaints menchanisms has been devised to comprehensively record, resolve and report citizens' complaints and enhance oversight.
- *Internal accountability*. While the methodology for selection of roads for RTIP-II has been finalized and agreed on, however, the LGED would need to ensure that all selections are made based on this methodology. The M&E framework has been developed under RTIP-I but still needs to become fully operational (by 2014) at the field level to serve its purpose of improving effectiveness of LGED's performance.
- *Quality of works on project roads*. As the project is geographically dispersed in 26 districts it presents a substantial challenge to monitor quality of all civil works contracts. Thus, there is a risk of poor quality works to be delivered on some project roads. The hiring of an external engineering firm to conduct regular technical monitoring of rural roads under RTIP has proved to be effective in ensuring the delivery of good quality works by contractors.

**Implementation of GAAP**

13. The overall responsibility for the GAAP implementation will rest with the Project Director of RTIP-II. The Executive Engineers of each district will be responsible for producing quarterly progress reports on the implementation of district-related GAAP activities, including monitoring of alert indicators on identified governance issues and risks, including the data from Suggestions and Complaints Committees, and submitting the quarterly reports to the Secretary of LGED and the Project Director. This information should be compiled for all districts and included as part of Quarterly Project Progress Reports that will be submitted by the LGED to the World Bank as per the Financing Agreement for the project. If the same alert indicators are observed during three continuous months, enhanced thematic or state supervision mission will be carried out jointly by the World Bank, LGED management and concerned local governments executing the project in the respective District/Upazila Parishad. Recommendations and/or revisions of the actions in the GAAP will be made jointly by the three concerned parties. If the same alert indicators still persist for another three months and/or there is ground for serious concern, the World Bank and MLGRD&C will discuss options for undertaking a detailed investigation and/or applying the WB or GoB sanctions regime.

## Table 6: GAAP Matrix

| Issues / Risk | Mitigating Actions to be taken | Agency Responsible | Timeline | Early Warning Indicators |
|---|---|---|---|---|
| **Lack of Effective Asset Management** | | | | |
| Need to improve efficiency of allocation and use of resources in rural road maintenance and asset management | Adopt and implement new maintenance policy and strategy | LGED/MLGRD&C | Approval of the ministry of MLGRD&C December 31 2012 | Business plan strategy not prepared by LGED or MLGRD&C<br>Annual reports on policy and strategy implementation by LGED to Secretary and Minister of MLGRD&C |
| | Develop and implement rural road maintenance and asset management system with support from RTIP-II based on clear and practical devolution of resources | LGED/ MLGRD&C/GoB | Date of approval of annual programs and budgets | Road inventory not updated by annual road surveys.<br>3-year maintenance budget requirements not prepared and integrated in MTBF. |
| | Mainstream in LGED programs including RTIP-II the best practices piloted under RTIP (road safety, environmental assessment guidelines) | LGED/MLGRD&C | Continuous | Road safety and procurement risk monitoring framework not mainstreamed in LGED projects. |
| | Incorporation and implementation of 5-year performance-based maintenance in RTIP-II civil works contracts | LGED | Date of approval of annual programs | Bidding documents not prepared; maintenance is done under tradition item-rated contracts. |
| | Develop and implement Integrated Decision Support System (IDSS) with RTIP-II support | LGED | 3rd year | Consultant not selected.<br>Lack of progress reports on implementation of IDSS. |
| **Fraud and Corruption** | | | | |
| Need to improve internal integrity | Carry out annual review of vigilance, public information disclosure, internal controls, suggestion and complaint mechanism to suggest improvements of internal integrity mechanisms. | LGED | Annually | Lack of disclosure of public information<br>Delays in recruitment of Integrated Performance Auditor. |
| | Adopt transparent and effective suggestion and complaint mechanism ensuring annual reporting on complaints received and actions taken | LGED | By start of the project | Absence of reporting on grievances redressal and complaints handling.<br>Absence of complaints even though the rebidding rate is high. |
| Need to increase transparency in procurement process and effectiveness of contract management | Set-up systems to prevent fraud and corruption during bidding process and contract implementation:<br>(a) Adequate disclosure of procurement plan and invitation for tenders;<br>(b) Mainstream use of red flags to identify risk of fraud and corruption in tender evaluation reports in RTIP-II<br>(c) Develop eProcurement and apply to RTIP-II;<br>(d) Develop contract management system and apply | LGED | Continuously<br><br>Prior to 1st bidding<br><br>In the third year of project implementation | Check-list of red flags not provided in tender evaluation reports<br>Low number of bidders<br>Significant gaps between bids and engineer's estimates<br>Absence of systematic follow up on bidders' complaints<br>Poor reporting on contract execution<br>Unwarranted payment delays<br>High number of major observations in ex-post procurement reviews. |

| Issues / Risk | Mitigating Actions to be taken | Agency Responsible | Timeline | Early Warning Indicators |
|---|---|---|---|---|
| | to RTIP-II | | | |
| | Application and monitoring of Procurement Risk Mitigation Framework (PPMR or PROMIS-RTIP-II) | | Ready by first week of January, 2013 | Lack of progress reports on Procurement Risk Mitigation Framework |
| | Clarify responsibilities of supervision consultant engineer to work in close coordination with the Executive Engineers in the districts to supervise implementation of RTIP-II civil works contracts instead of being adviser as in RTIP-I | LGED | In supervision contracts | Arrangements not in contracts of supervision consultants and civil works |
| | Review contract management as part of the Integrated Performance Audit | LGED | Twice a year | |
| Need to improve financial management system | Make Unified Financial Management System (UFMS) fully functional or replace with new system and roll out to all LGED projects including RTIP-II | LGED | UFMS within 1st year or new system within 3rd year | Discrepancies between disbursements and project progress<br>High number of audit objections in annual financial audits<br>Inordinate delays in submitting FMRs |
| **Weak Accountability** | | | | |
| Need to increase citizen oversight | Enhance a Suggestions and Complaints Mechanism to cover all aspects of project implementation and involve all project stakeholders<br><br>Mainstream citizen oversight under RTIP-II through community monitoring and Suggestions and Complaints Mechanism at local level<br><br>Adopt disclosure policy for RTIP-II and disclose project information on project website<br><br>Enhance a project monitoring database with information on the financial progress (in addition to information on physical progress)<br><br>Set up board signs with contract information and SCM contact information at each project road site for the beneficiaries to monitor progress of works | LGED | 1st year of project implementation<br><br>1st year of project implementation<br><br>By start of the project<br><br>2nd year of project implementation | No suggestions and comments from project stakeholders<br><br>Absence of community monitoring<br><br>Project information not updated<br><br>No data on financial progress of projects disclosed on the website<br><br>No board signs at project roads |
| Need to strengthen internal | Select RTIP-II roads based on agreed methodology and measurable and objective selection criteria | LGED | At time of approval of annual programs | Delays in or absence of submission of list of roads in annual programs to the Bank |

| Issues / Risk | Mitigating Actions to be taken | Agency Responsible | Timeline | Early Warning Indicators |
|---|---|---|---|---|
| accountability | Strengthen internal accountability during RTIP-II implementation by<br>(a) strengthening LGED's project management capacity with project management consultant<br>(b) carrying out financial audits and integrated performance audits (by external independent auditors) | LGED | September 2012<br><br>February 15 and August 15 of each year | Project management consultant not recruited or with delays<br><br>Auditors not selected.<br>Audit reports not provided or with delays<br>Delays in addressing audit objections. |
| | Operationalize the M&E framework established under RTIP-I | LGED | 2nd year | Guidelines for operationalization of M&E framework not adopted. |
| | Improve processes and systems by preparing IT-ICT-MIS strategy and action plan and implementing the recommended actions with RTIP-II support | LGED | Within 3rd year | Lack of LGED-wide IT-ICT-MIS strategy.<br>Agreed actions not implemented. |
| **Poor Quality of Service** | | | | |
| Need to improve quality of works on project roads | Use Performance Management in RTIP-II with performance targets for:<br>(a) project districts as decision criteria to continue allocating project resources during implementation; and<br>(b) supervision consultants<br><br>Carry out Integrated Performance Audit to evaluate compliance with technical specifications in civil works contracts and with environmental and social safeguards<br><br>Quality Assurance and Management including ISO certification | LGED | Annually<br><br>Semi-annually<br><br>3rd year | No performance targets determined for districts<br>No annual progress reports on Performance Management<br><br>Intergrated Performance Auditor not selected<br>Audit reports not provided or with delays<br>High number of audit observations<br>Audit observations not addressed or with delays<br><br>ISO certification not obtained |

## Annex 7: The Selection Methodology for the Investments Component
## Bangladesh: Second Rural Transport Improvement Project (P123828)

1. This annex describes the selection methodology for investments under the following components: (i) RPM; (ii) UZR and UNR improvement; (iii) ghats improvement; and (iv) GCMs improvement. A multi-criteria methodology including physical and socio-economic indicators was applied to all the components.

### (i) RPM Component

2. The methodology described below aims to present the main criteria to prioritize the key roads in "maintainable condition" that will be selected for the RPM component under the project (about 3,550 km) and within it, those that are a priority for First Year (about 1,000km).

3. The 2011 LGED Rural Infrastructure Maintenance Management Unit (RIMMU) Road Inventory for the 26 project districts has been used as the data-base to select the roads for the RPM component. The inventory has complete information for about 21,400 km of roads (3,128 roads).

4. The following criteria were applied to identify the priority roads for the RPM component:

- **Roads should be in rural areas**
- **Roads are suitable for Road Maintenance or Rehabilitation**:
  - Whole length of road surface is BC or concrete;
  - Roads do not have cross-drainage gaps along the road alignment; and
  - IRI: Roads have IRI higher than six and lower than 13
- **Minimum length**: All UZR should be more than five km long and all UNR should be more than 3km long.
- **Minimum carriageway width**: UZR should have a carriageway width of more than 3m and all UNR should have a carriageway width of more than 2.75m.
- **Traffic volume**: All roads with AADT higher than 4,000 and/or CVD higher than 1,000 were excluded and roads with and AADT> 800 and a CVD more than 100 were given priority.

5. This process of applying these selection criteria for the RPM component reduces the 21,400 km of roads (3,128 roads) in the inventory to a long-list of 3,804 km (451 roads).

**Prioritization of Roads for First Year**

6. Since a maximum of 1,000km of roads can be included in the first year, an indicative number of km of roads were identified to be targeted for each of the 26 districts based on a score formed by three equally weighted factors:

(i) Population (the district with the highest population was given a score of one and the other districts were score pro-rata);

(ii) Poverty (the district with the highest percentage of poor people was given a score of one. The district with the highest percentage of people living in extreme poverty was also given a score of one. The other districts were given score pro-rata. The simple average of both score was then computed); and

(iii) Maintainable road needs (the district with the highest maintainable road needs was given a score of one and the other districts were score pro-rata).

7. After setting the number of km targeted for each district, the following criteria were applied to select the 1,000 km of roads for the first year of the RPM component:

8. First, one road per Upazila was selected to avoid overloading any Upazila due to limited implementation capacity. Since more than one road satisfied the criteria described above in each Upazila, the roads were ranked by traffic volume and IRI within each Upazila. Roads with the highest traffic volume and candidate for periodic maintenance (IRI between seven and nine) were prioritized.

9. Second, roads were prioritized with the highest traffic volume and with appropriate road quality for periodic maintenance (IRI between seven and nine) within each district so that they do not overpass the targeted number of kms per district.

10. LGED has carried out field verification of the selected roads to confirm that (a) they are not receiving fund for remedial works from other sources (ongoing and work completed four years prior to the expected project starting date); (b) they are not included in the LGED 2011/12 maintenance program; or (c) the secondary data does fully reflect the field situation.

11. This methodology provides a final list of 96 roads with a total length 918 km for the project's First Year which comply with all the above described criteria.

**(ii) UZR and UNR improvement component**

12. The methodology described below aims to present the main criteria to prioritize the key roads for improvement. Under the project, 750 km of UZR and 500km on UNR will be selected for improvement.

13. The 2011 LGED Rural Road Inventory for the 26 project districts has been used as the data-base to select the roads for the Improvement component. The inventory includes information on total length, length by type of construction, and it also includes a connectivity indicator. The database includes 6,500 km of UZR roads and 16,000 km of UNR roads.

14. The following criteria were applied to identify the priority roads for the Improvement component:

- **Roads should be in rural areas and gazetted by the GoB.**
- **Roads are suitable for improvement**:
    - **Minimum length**: All UZR should be more than five km long and all UNR should be more than 4km long;
    - **Minimum carriageway width**: UZR should have a carriageway width of more than 3m and all UNR should have a carriageway width of more than 2m; and
    - **Earthen surface**: All UZR should have at least 2km of earthen surface, and non UNR should have a full BC/concrete pavement surface
- **Connectivity Indicator**: Roads were prioritized according to a connectivity indicator.

This indicator was constructed based on the following criteria:

- Access to GMCs (three points were given for each GMC along the road with a maximum of 15 points);
- Access to Rural Markets (two points were given for each rural market along the road with a maximum of ten points);
- Access to Primary Schools (three points were given for each primary school along the road with a maximum of 15 points);
- Access to Health Care centers (two points were given for each Heath care centers along the road with a maximum of six points);
- Bank/NGOs/Deep Tubewells/Shallow Tubewells/Mosques etc (one point was given for each of this facilities along the road with a maximum of nine points); and
- Number of km of roads (five points were given for each km of road lengths with a maximum of 45 points)

15. Since a maximum of 750 km of UZR roads and 500 km of UNR will be included in the project, an indicative number of km of roads were chosen to be targeted for each of the 26 districts based on a socio-economic score formed by three equally weighted factors:

(i) Population (the district with the highest population was given a score of one and the other districts were score pro-rata);
(ii) Poverty (the district with the highest percentage of poor people was given a score of one. The district with the highest percentage of people living in extreme poverty was also given a score of one. The other districts were given score pro-rata. The simple average of both score was then computed); and
(iii) Maintainable road needs (the district with the highest maintainable road needs was given a score of one and the other districts were score pro-rata).

16. After setting the number of km targeted for each district, the following criteria were applied:

- First, roads that satisfy the physical criteria were ranked according to the connectivity indicator and a maximum of two roads per Upazila were selected to avoid overloading any Upazila due to limited implementation capacity.
- Second, within the selected roads in the previous step, roads with the highest connectivity indicator were prioritized within each district so that they do not overpass the targeted number of kms per district.

17. LGED has carried out field verification of the selected candidate roads to confirm that they have not been selected for remedial works using other funds, and that the secondary data does fully reflect the field situation. After verification with District Chief Engineers, a list of 754 km of earthen surface UZR roads and 485 km of UNR roads have been identified as candidate roads for the improvement component. These roads comply with all the above described criteria. However, it is expected that the final list of roads will be confirmed after field verification.

**(iii)Ghats improvement component**

18. The methodology described below aims to present the main criteria to prioritize 20 ghats to be improved under the project.

19. Ten ghats were identified on the two rural waterways to be improved under the pilot rural waterway transport component, and ten additional ghats were identified on other important rural waterways in the project area.

20. The RWT component includes development of improved boat landings and loading/unloading facilities at ten ghats on the two pilot waterways (20 ghats total). A hydrographic survey was conducted that identified four candidate ghats for the Kaliakoir-Mirzapur river stretch and three ghats for the Batikandi-Khatalia river stretch. Since there is no formal classification of ghats, and there are no hydrographic surveys available for the network of rural waterways in the country, the ten ghats on other rural waterways in the project area were identified using the methodology described below.

21. Information on rural ghats were requested from all 26 LGED district offices in the project area if they considered waterway transport to be of significance in their district. This generated responses from 12 districts and a total of 162 possible ghats.

22. The criteria used for short-listing were as follows:
Step 1: Elimination of ghats not appropriate for project investments in the following areas:

- Where there is a significant risk of river bank erosion (or heavy siltation) – improved ghats may not be sustainable at such locations.
- Where there is a problem with the availability of land – there was only one case of this in the sample.
- That are not currently leased out – the fact that a ghat is leased out is an indicator of its local importance.
- Which function for six months of the year or less – ghats that operate for all or most of the year are likely to be of greater local importance.
- Which have a daily traffic of 15 or fewer boats per day – the number of boats using a ghat is an indicator of its importance.

23. This process reduced the long-list of 162 ghats to a short-list of 43.

24. The following criteria was used to identify the ten ghats to be improved under the project:

- Allow only one ghat (the one with the highest daily traffic per upazila), and no more than two per district.
- Based on local knowledge and experience of LGED officers, those ghats that were not suitable for development were deleted.

25. This process has generated a priority list of ten candidate ghats. This list, along with seven ghats identified in the pilot waterways, are the candidate ghats to be improved under the project. Three ghats to be selected during the third year of implementation, using the criteria and consultation. The Bank's approval will be sought to finalize.

### (iv) GCMs improvement component

26. The methodology described below aims to present the main criteria to prioritize the 50 GCMs to be improved under the project. There are a total of 2,100 designated GCMs in Bangladesh, about 950 in the 26 project districts.

27. Three sources of information on GCMs in the project area were collected:

- The existing, but incomplete, GCM inventory held by LGED;
- Priorities for GCM improvement identified by the LGED districts and upazilas as part of the Inception Workshop process; and
- Additional base-data on market status and conditions collected through the LGED district offices, first in writing and then through personal contacts to clarify any queries and to fill gaps in the data.

28. The first step of the process was to prepare an inventory of GCMs in the project area. This was analyzed with the aim of generating a long-list of possibilities by applying the following three exclusion criteria:

- GCMs should not have already been improved under another LGED project;
- GCMS market areas by an adjacent should not have a significant risk of erosion – as noted above, many markets are located on the banks of rivers; and
- GCMs should not be any current problems with availability of sufficient land for the market, and no disputes over government ownership of the market land.

29. Of the 950 GCMs in the project area, no information was provided for 64, therefore only 886 were analyzed in detail. A total of 651 GCMs have been either comprehensively developed in accordance with the LGED planning and design manual, or have been 'partially developed' and require further investment to improve market facilities according to district data.

30. 109 undeveloped GCMs candidates for improvement under RTIP-II remained after eliminating those markets with erosion problems or land issues. The procedure used to reduce the long-list of 109 to the final list of 50 RTIP-II market schemes is as follows:

- GCMs were selected to ensure a reasonable distribution of market schemes among the project districts.
- The long-list of 109 markets was correlated with the priorities defined by the districts in the pro-formas that they prepared for the Inception Workshop.
- Markets which are on the long-list and are also identified as high priorities by the districts on their pro-formas have been selected.

31. After applying the above criteria, 50 candidate GCMs were identified. These 50 GCMs satisfy the project selection criteria taking into account the basis of local knowledge and experience of the district staff and their "on the ground" understanding of needs and priorities.

**Table 7.1: Final List of RPM Roads for First Year[15].**

| District | Upazila | Road Code | Road Name | Total Length (km) |
|---|---|---|---|---|
| Pabna | Bera | 176162003 | Nalkhola GC - Badherhat on RHD road | 6.0 |
| Pabna | Chatmohar | 176223003 | Mulgram U.P.-Failzana U.P. road. | 12.2 |
| Pabna | Ishwardi | 176393002 | Sahapur UP-Charkurulia hat(End of Al-Haj more) road. | 5.6 |
| Pabna | Pabna-S | 176552006 | Dhopaghata RHD-Dogachi GCM (Golam Murtoza) Road. | 8.0 |
| Pabna | Santhia | 176722003 | Santhia Upazila H/Q - Demra GC (Dohore jani more). | 11.2 |
| Serajganj | Kazipur | 188502001 | Simanta bazar RHD-Sonamukhi GC. | 8.0 |
| Serajganj | Raiganj | 188613007 | Dubil UP to Amsara Hat Via Maltinagar | 7.0 |
| Serajganj | Tarash | 188892003 | Tarash-Katagari hat GCC Rd. | 11.9 |
| Gazipur | Kaliganj | 333342002 | Kaliganj-Kapasia Rd. | 16.0 |
| Gazipur | Gazipur-S | 333302004 | Hotapara-Perojali Hatkhola bazar Road. | 6.7 |
| Gazipur | Kapasia | 333362003 | Kapasia GC-Monohordi Rd. | 14.2 |
| Jamalpur | Dewanganj | 339152001 | Dewanganj-Sanandabari viaTaratia Rd. | 15.6 |
| Jamalpur | Islampur | 339293006 | Patharshi UP-Molomgonj Bazar Rd. | 4.5 |
| Jamalpur | Jamalpur-S | 339363002 | Rashidpur U. P to Jamtala bazar. | 6.7 |
| Jamalpur | Melendah | 339612007 | Melandah GC to Gobindagonj R& H Road. | 4.3 |
| Jamalpur | Sarishabari | 339853015 | Doail U/P-Shaincherpar Road | 6.6 |
| Jamalpur | Madarganj | 339583011 | Raygonj bazar-Adervita U/P. Rd. | 3.9 |
| Kishoreganj | Bajitpur | 348063009 | Sararchar-Pirijpur Bazar Rd. | 5.1 |
| Kishoreganj | Tarail | 348922002 | Tarail HQ-Cherang GCC Road | 5.5 |
| Kishoreganj | Hossainpur | 348272001 | Hossainpur-Bakchanda GC. | 9.7 |
| Kishoreganj | Karimganj | 348422001 | Karimganj-Gundhar GC Road | 10.0 |
| Kishoreganj | Kishoreganj-S | 348493005 | Jalia bazar-Josodal UP Rd. | 5.4 |
| Manikganj | Ghior | 356222003 | Ghior HQ -Zabra GC Road | 7.3 |
| Manikganj | Harirampur | 356282002 | Andharmanik G.C-Nayarhat G.C road. | 8.0 |
| Munshiganj | Lauhajong | 359442002 | Dighali (Maliranka)-Nowpara-Kusumpur (Lauhajong Portion7.5Km) Road. | 7.5 |
| Munshiganj | Munshiganj-S | 359563005 | Makahati-Chardumuria. | 3.5 |
| Munshiganj | Tongibari | 359943001 | Tongibari-Hashail Road. | 8.1 |
| Mymensingh | Bhaluka | 361132007 | Dhaka-Mym. H/Way (Seed Store GC)-Shakhipur | 13.8 |
| Mymensingh | Gouripur | 361232001 | Ramgopalpur RHD to Shyamgonj GC via Gouripur. | 10.7 |
| Mymensingh | Haluaghat | 361242002 | Pabiajuri Bailly Bridge (Nalitabari)-Dara Road(Mymensingh part). | 9.8 |
| Mymensingh | Nandail | 361722002 | Nandail H.Q-Bakchanda G.C Rd. | 8.8 |
| Mymensingh | Phulpur | 361812006 | Bhaitkandi R&H. Road-Narayankhula G.C. Bhaitkandi G.C. | 5.9 |

[15] Second, third and fourth year RPM and PBMC roads will be selected based on the agreed criteria and mathodology.

| District | Upazila | Road Code | Road Name | Total Length (km) |
|---|---|---|---|---|
| Mymensingh | Fulbaria | 361202003 | Fulbaria-Hat kalirbajar Road. | 9.3 |
| Narayanganj | Narayanganj-S | 367583004 | Kutubpur UP Office (Tatkhana) to Dhaka-Narayangonj link Road via Bhuighar bus stand bazar. | 4.0 |
| Narayanganj | Rupganj | 367682001 | Porshi G.C.-Rupganj-Kayetpara-Demra RHD rd. | 18.0 |
| Narayanganj | Sonargaon | 367043009 | Sanmandi UP Office-Kikertek bazar Road via Darikandi, Sonakhali, Pachpir Darga | 8.6 |
| Narshingdi | Belabo | 368073002 | Jangli Shibpur bazar-Dhukandi-Baznabo UP office Road. | 10.1 |
| Narshingdi | Monohardi | 368522003 | Monohordi H/Q-Drinerghat R&H | 12.4 |
| Narshingdi | Shibpur | 368763005 | Gazaria UP - Jangalia bazar Via Bariatola. | 5.9 |
| Narshingdi | Raipura | 368642001 | Sreerampur Rail gate R&H-Monipura Gc | 16.4 |
| Netrokona | Durgapur | 372182001 | Durgapur (GC)-Nazirpur(GC) road | 9.3 |
| Netrokona | Kalmakanda | 372402002 | Kalmakanda (GC)-Nazirpur GC Road. | 14.5 |
| Netrokona | Madan | 372562004 | Madan to Kendua GC road via Kaitail & Borory Bazar. | 9.2 |
| Sherpur | Jhenaigati | 389372001 | Jhenaigati-Gobindaganj. | 10.6 |
| Sherpur | Sherpur-S | 389882003 | Sherpur-Chandrakona Road | 10.7 |
| Sherpur | Sreebordi | 389902002 | Sreebordi-Karnajhora GC | 14.5 |
| Tangail | Basail | 393092006 | Basail-Shakhipur (Nalua) Road. | 6.1 |
| Tangail | Gopalpur | 393382001 | Gopalpur-Nalin Hat | 9.6 |
| Tangail | Kalihati | 393472011 | Suruz G.C.-Dhalapara G.C. Road | 17.1 |
| Tangail | Nagarpur | 393763004 | Shahbatpur-Batra Bazar Road via Mailjani road | 5.0 |
| Tangail | Dhanbari | 393962001 | Dhanbari-Kendua Rd | 7.8 |
| B.Baria | Bancharampur | 412042001 | Bancharampur GC-Jibonganj GC Road via Sonarampur Bazar | 23.2 |
| B.Baria | Nasirnagar | 412902003 | Nasirnagar R&H-Haripur GC-Madhabpur R&H Road via Chairkuri GC | 19.3 |
| Chandpur | Chandpur-S | 413222002 | Chandpur (Bagadi R&H)-Chandra GC Road. | 8.3 |
| Chandpur | Faridganj | 413452001 | Faridganj GC-Rupsha GC Road. | 5.4 |
| Chandpur | Matlab (Uttar) | 413762003 | Senganchar-Kalirbazar Road. | 13.5 |
| Chandpur | Shahrasti | 413953006 | Tamta U.P H/Q-Khorda Fery ghat Road | 4.6 |
| Chandpur | Haziganj | 413492006 | Balakhal-Rampur-Narayanpur Road | 10.1 |
| Chittagong | Boalkhali | 415123002 | Bengura D.C. Road. | 9.1 |
| Chittagong | Fatikchari | 415332009 | Chittagong Khagrachari Road to Binajhuri Road via Nazirhat GC and Maijbhandar Darbar Sharip | 7.5 |
| Chittagong | Lohagara | 415473001 | Baro Awlia Tankabati road | 14.0 |
| Chittagong | Rangunia | 415702007 | Parua D. C. Rd. (From RHD #99) | 14.1 |
| Comilla | Brahmanpara | 419152004 | Comilla-Fakir bazar-Salda Nodi road | 6.6 |
| Comilla | Burichong | 419183002 | Burichang UP Office- Anandapur via Bakshin | 7.3 |
| Comilla | Laksham | 419722003 | Laksam-Monohargonj | 6.4 |
| Comilla | Chandina | 419273006 | Kutumbapur-Kaliarchar Bazar Road. | 11.4 |

| District | Upazila | Road Code | Road Name | Total Length (km) |
|---|---|---|---|---|
| Comilla | Debidwar | 419402003 | Birallah R&H-Dhampti hat G.C.C. Rd. | 7.6 |
| Cox's Bazar | Cox's Bazar-S | 422242003 | Napith Khali-Islampur-Pokkhali-Chowfaldandi Road | 14.2 |
| Cox's Bazar | Pekua | 422952001 | Charapara RHD to PABT Via Sowdagarhat GC Road. | 5.6 |
| Feni | Daganbhuiyan | 430252002 | Shebar hat-dudmukha bazar road | 6.2 |
| Feni | Porshuram | 430512001 | Parashuram-Subar bazar-Montola-Fulgazi Bazar Road | 13.4 |
| Feni | Sonagazi | 430943001 | Miar Bazar-Amiruddin Munshi Rd | 4.1 |
| Laxmipur | Laxmipur-S | 451433010 | Shantirhat-digholi Rd. | 4.7 |
| Laxmipur | Raipur | 451582004 | Char Ababil Char ruhita Embank Cum Road. | 21.7 |
| Laxmipur | Ramganj | 451652004 | Baluachowmuhani-Shampur Miahr hat Road. | 6.3 |
| Noakhali | Begumganj | 475072003 | Bangla Bazar-Padipara-Amishapara Bazar road | 5.1 |
| Noakhali | Chatkhil | 475102001 | Chatkhil-Chandragong road | 9.6 |
| Noakhali | Kabir Hat | 475903001 | Maijdee-Oter hat-Bhuiar hat Road (Old Hospital Road). | 8.0 |
| Noakhali | Companiganj | 475212004 | Bashur hat-Moulovi Bazar Road towards Boktar munshi GCC | 7.4 |
| Noakhali | Senbag | 475802008 | Koresmunshi GC-Dalua [Gazirhat Feni RHW]. | 7.4 |
| Noakhali | Sonaimuri | 475882006 | Kachihata-Thanar hat Road (Paloan pol RHW-Amannullapur UP-Eadgha Amin bazar-Amishapara UP) | 14.7 |
| Habiganj | Madhabpur | 636712001 | Madhabpur-Chowmohoni bazar road | 6.0 |
| Habiganj | Nabiganj | 636772007 | Nabigonj-Rudra Gram Rd. | 8.0 |
| Habiganj | Bahubal | 636052006 | Jangalia-Katiadibazar via Nandanpur Bazar | 8.8 |
| Habiganj | Chunarughat | 636262002 | Chunarughat-Shakir Mohammad Road | 5.5 |
| Habiganj | Habiganj-S | 636443001 | Shaistanagar Bazar-Poil UP Office-Moshajan Bazar Rd. | 6.6 |
| Moulvibazar | Kamalganj | 658562005 | Kamolgonj HQ.-Munshibazar G.C. Road . | 7.0 |
| Moulvibazar | Rajnagar | 658802001 | Rajnagor-Fatepur (Balagonj) | 17.3 |
| Moulvibazar | Sreemangal | 658833002 | Satgaon-Khairuzzaman Rd. | 5.0 |
| Sunamganj | Jagannathpur | 690472001 | Jagannathpur-Biswanath | 13.3 |
| Sunamganj | Chatk | 690232007 |  | 18.5 |
| Sylhet | Zakiganj | 691942001 | Atgram (R&H)-Zakigonj (G.C) Road. | 11.9 |
| Sylhet | Dakshin Surma | 691952004 | Sylhet-Kamalbazar-Ponaullahbazar-Biswanath GC Road (Sadar portion) | 7.7 |
| Sylhet | Golapganj | 691382003 | Sylhet-Gasbari GC-Kanaighat Rd (Golapgonj Portion) | 11.7 |
| Sylhet | Sylhet-S | 691622005 | Shiber bazar GC-Companigonj RHD Road (Sadar Portion). | 6.5 |
| Dhaka | Keraniganj | 326382002 | Hasnabad Power Station-Mollarhat Road via Bibir Bazar,Mawa,Paina Bazar, purbadi Ghoshbar. | 12.2 |
| Dhaka | Nawabganj | 326622001 | Nawabgonj-Paragramhat GC | 16.4 |
| **97** |  |  |  | **924.9** |

**Table 7.2: List of Roads for First Year PBMC**

| SL No. | District | Upazila | Road Code | Road name | TotalLength (Km) |
|---|---|---|---|---|---|
| 1. | Noakhali | Noakhali-S | 475872001 | Sonapur-Thanar hat-Akther Miar Hat Road | 16.30 |
| 2. | | Noakhali-S | 475872010 | Banglabazar-Al-amin bazaar-Halim bazaar-Subarnachar Upazilla Hq Road | 5.30 |
| | | | | **Sub-Total:** | **21.60** |
| 3. | | Subarna Char | 475892006 | Upazilla H. Q-Halim Bazar-Al-Amin Bazar-Banglabazar Road | 8.25 |
| 4. | | | 475892002 | Sonapur-Thanar hat-Akther Miar Hat Road | 15.95 |
| | | | 475893006 | Chor Amanullah UP Office-Khasernhat-Banglabazar-Karimbazar Road | 8.41 |
| | | | 475892001 | RHD-Khaserhat-Chomir hat Road | 1.90 |
| | | | | **Sub-Total:** | **34.51** |
| | | | | **Total:** | **56.11** |
| 7. | Comill | Chouddagram | 419312002 | Rajabazar-Alkara (Shah Fakruddin Road) | 34.50 |
| 8. | Moulvibazar | Kulaura | 658652001 | Brahman Bazar-Fenchugonj | 15.00 |
| 9. | Cox's bazaar | Teknaf | 422902002 | Teknaf Bus Station – Shamlapur Road | 31.27 |
| 10. | Cox's bazaar | Ukhiya | 422942001 | Coat bazaar-Shaplapur GC Road | 30.09 |
| | | | | **Grand Total:** | **166.97** |

## Table 7.3: List of Candidate UNR Roads

| District | Upazila | Road Code | Road Name | Total Length (km) | Total for Works (km) |
|---|---|---|---|---|---|
| PABNA | BHANGURA | 176193004 | Khanmorich UP HQ - Mirzapur GC Road | 12.00 | 12.00 |
| PABNA | CHATMOHAR | 176223005 | Mathurapur U.P.-D.B.gram U.P.road. | 9.35 | 8.35 |
| PABNA | PABNA-S | 176553018 | Maligasa UP Office(Ramchandropur RHD)-Pikalhat Road Via Ataullahpur Hasimpur. | 6.50 | 5.80 |
| SERAJGANJ | RAIGANJ | 188613001 | Dhangora UP at Raigonj-Ghurka UP Office | 6.50 | 5.60 |
| SERAJGANJ | TARASH | 188893005 | Tarash UP Office - Nadosayedpur Hat Road | 10.20 | 10.20 |
| SERAJGANJ | ULLAPARA | 188943002 | Purnimaganti UP-Rajman Hat via Koyra hat road | 13.10 | 10.21 |
| DHAKA | DHAMRAI | 326143002 | Dhamrai Pourasava to Savar Bazar via Mamura Road | 6.50 | 1.65 |
| DHAKA | DHAMRAI | 326143009 | Dhamrai Pourasava (Bata gate) to Jalsin bazar Road | 11.00 | 7.40 |
| DHAKA | KERANIGANJ | 326383016 | Nekrozebag R&H to Dhaka Mawa road at Abdullahpur via Muktirbag & Firm of Raton Road | 6.50 | 6.15 |
| DHAKA | SAVAR | 326723013 | Dhaka-Aricha RHD. 20 Mile Army check post-Pathalaia UP (Ghugudia) Road | 4.60 | 1.40 |
| GAZIPUR | KALIAKOIR | 333323007 | Mediasolay (Chapair UP)-Bangla bazar Via Boraibari Paikpara Via kotbari Chowrasta Bazar | 11.61 | 9.66 |
| GAZIPUR | KALIGANJ | 333343001 | Muktarpur UP-Moisher Bazar via Chopair, Dollan Bazar Road | 17.86 | 2.66 |
| GAZIPUR | KAPASIA | 333363007 | Singhasree Union H/Q-Amraid bazar via Sohagpurbazar Rd. | 17.40 | 6.50 |
| GAZIPUR | SREEPUR | 333863003 | Sreepur-Kawraid | 13.00 | 7.35 |
| GAZIPUR | SREEPUR | 333863011 | Rajendrapur-Prahladpur via Lohagachia | 11.03 | 6.98 |
| JAMALPUR | BAKSHIGANJ | 339073006 | Sadurpara UP Office - Tupkarchar Kathaltoli Ghat via Jobbergonj GC Road | 2.74 | 2.74 |
| JAMALPUR | DEWANGANJ | 339153004 | Char Amkhawa (Sanandabari) UP-kather Bill Bazar via Lonker Char Rd. | 9.00 | 7.50 |
| JAMALPUR | ISLAMPUR | 339293012 | Benuarchar GC - Shampur R&H Road | 6.00 | 6.00 |
| KISHOREGANJ | BAJITPUR | 348063004 | Gajirchar UP. Office-Baliardi UP Office Via Akhra. | 5.84 | 5.02 |
| KISHOREGANJ | HOSSAINPUR | 348273001 | Aribaria UP H/Q-Rampur bazar via SRD (Zia road) Road | 10.53 | 9.42 |
| KISHOREGANJ | KATIADI | 348453004 | Banagram UP H/Q.-Sararchar GCvia Magura Bazar Rd. | 10.00 | 3.80 |
| KISHOREGANJ | KISHOREGANJ-S | 348493011 | Boulai Puran bazar to Jasodal UP via Madunagar Rd | 4.81 | 3.69 |
| KISHOREGANJ | PAKUNDIA | 348793004 | Sayedgaon chowwrasta-Hossendi UP-Modhapara Bus Stand RD(Hat) | 9.30 | 4.54 |
| MANIKGANJ | GHIOR | 356223009 | Ghior GC-Ulail bazar Via Terosree road.(Ghior portion) | 5.27 | 2.37 |
| MUNSHIGANJ | SIRAJDKHAN | 359743013 | Balurchar UP-to Taltala G.C. via Kumarkhali | 6.50 | 5.90 |
| MUNSHIGANJ | TONGIBARI | 359943007 | Satullah-Panchgaon Bazar-Boloi-Fazusha Road. | 5.33 | 1.83 |
| MYMENSINGH | DHOBAURA | 361163002 | Dhudnoy Bazar - Gamaretola UP (Kolsindur GC) Road | 5.10 | 5.10 |
| MYMENSINGH | MYMENSINGH-S | 361523007 | Shambugonj old bus stand bazar-Parangonj Bazar via Sirta UP. Office | 17.67 | 15.75 |
| MYMENSINGH | MUKTAGACHA | 361653005 | Daowgaon UP Office - Battola Bazar Road | 4.20 | 4.20 |
| MYMENSINGH | PHULFUR | 361813004 | Bhaitkandi U.P. to Chargoadanga bazar Road via Rambhadrapur. | 10.50 | 10.50 |

## Table 7.4: List of Candidate UNR Roads (Cont.)

| District | Upazila | Road Code | Road Name | Total Length (km) | Total for Works (km) |
|---|---|---|---|---|---|
| NARAYANGAN | ARAIHAZAR | 367023001 | Khaliarchar-Modhorchar. | 6.32 | 6.32 |
| NARAYANGAN | RUPGANJ | 367683004 | Aukhabo RHD-Upazila HQ via Majhipara Mirkutire Saw Road | 5.82 | 1.83 |
| NARSHINGDI | NARSHINGDI-S | 368603020 | Shilmandi U.P Office (South Shilmandi)-Shilmandi Natun Bazar Road. | 5.00 | 3.15 |
| NARSHINGDI | RAIPURA | 368643010 | Mahamudabad R&H-Dulatkandi-Algi Bazar | 8.06 | 6.46 |
| NARSHINGDI | RAIPURA | 368643017 | Mirzapur U.P. Office-Chanderkandi U.P. Office Road. | 9.42 | 7.05 |
| NETROKONA | KENDUA | 372473010 | Nowpara UP Office - Amlitala Bazar via Bolishimul UP Office Road | 4.60 | 4.60 |
| NETROKONA | PURBADHALA | 372833014 | Trimohini (R&H) - Jamdhala Bazar Road via Dhalamolgaon UP Office Road | 10.50 | 10.50 |
| SHERPUR | NALITABARI | 389703001 | Mahamudabad R&H-Dulatkandi-Algi Bazar | 8.00 | 8.00 |
| SHERPUR | SREEBORDI | 389903006 | Ranishimul UP - Bhatpur Bazar Road | 7.40 | 7.40 |
| TANGAIL | BASAIL | 393093002 | Kashil UP Office-Aisara Bazar via Janjania. | 12.00 | 5.16 |
| TANGAIL | BHUAPUR | 393193007 | Gobindashi UP-Nikrail Bazar Road | 9.05 | 6.02 |
| TANGAIL | DELDUAR | 393233002 | Baoikhula Bazar-Nallapara hat via Dubail UP office, Bathuli hat, Fultara Hat Road | 14.52 | 8.39 |
| TANGAIL | GHATAIL | 393283002 | Kadamtoli (Digar UP)-Teghory-Maiderchala Bazar Road | 6.10 | 4.62 |
| TANGAIL | MADHUPUR | 393573015 | Bhalghat - Mirzapur Bazar Road | 4.85 | 4.85 |
| TANGAIL | TANGAIL-S | 393953003 | Tangail-Dainnya UP office/ Binnafoir Bazar Road | 4.20 | 2.55 |
| B.BARIA | BANCHARAMPUI | 412043005 | Salimabad UP (Asrafbad)-Rupasdi bazar Road via Hogla Kanda | 8.65 | 6.45 |
| B.BARIA | B.BARIA-S | 412133003 | Ramrail Bazar-Sultanpur UP upto Sultanpur chawmahani Rd. | 9.41 | 3.07 |
| B.BARIA | B.BARIA-S | 412133020 | Rampur Bazar-Laxmimura bazar via char Islampur Up Rd. | 9.33 | 8.13 |
| B.BARIA | KASBA | 412633007 | Badair UP Office (Mandarpur Bazar)-Niamatpur Bazar via Mulogram Bazar Road | 9.02 | 1.94 |
| B.BARIA | NASIRNAGAR | 412903003 | Dharmondal UP Office-Marakut Bazar Road (Fundauk Bazar) | 9.85 | 9.85 |
| CHANDPUR | CHANDPUR SADA | 413223019 | RHD to Debpur via Bardia Bazar - Bishnupur UP Road | 3.00 | 3.00 |
| CHANDPUR | FARIDGANJ | 413453008 | Latifgonj Bazar-Paschim Subidpur UP (Uttali) Road via Guher Bazar | 12.08 | 7.67 |
| CHANDPUR | SHAHRASTI | 413953002 | Khila Bazar (Khila Eidgah)-Shahrasti Bazar Road via Gabtoli | 4.80 | 3.85 |
| CHANDPUR | MATLAB (DAKSH | 413963001 | Matlab-Master Bazar Ghosherhat Road | 9.80 | 7.80 |
| CHITTAGONG | BANSKHALI | 415083004 | Puichari u.p.to Khudukkhali bazar rd.(Prem bazar-Chanua Emb.) | 6.80 | 2.15 |
| CHITTAGONG | FATIKCHARI | 415333004 | Bhujpur U.P. H.Q. to Mirzerhat Road via Sandip Para. | 10.35 | 9.91 |
| CHITTAGONG | FATIKCHARI | 415333018 | Mohammed Takirhat G.C.to Abdullahpur U.P.HQ.Road | 2.15 | 0.40 |
| CHITTAGONG | HATHAZARI | 415373017 | Rowshan road(Mirza pur,Gumanmordon) | 4.00 | 3.80 |
| CHITTAGONG | SITAKUNDA | 415863011 | Abdus Sattara Road | 5.71 | 1.65 |

## Table 7.5: List of Candidate UNR Roads (Cont.)

| District | Upazila | Road Code | Road Name | Total Length (km) | Total for Works (km) |
|---|---|---|---|---|---|
| COMILLA | BARURA | 419093004 | Paranpur Bazar[ R&H]-Payelgacha UP office Road | 7.80 | 6.64 |
| COMILLA | BARURA | 419093008 | Galimpur UP Office-Paranpur bazar Road | 2.70 | 2.16 |
| COMILLA | BRAHMANPARA | 419153002 | Baradushia bazar[ R&H]-Shashidal UP Office Rd. | 5.17 | 1.99 |
| COMILLA | BURICHONG | 419183011 | Mokam UP Office - Abidpur Bazar Road via Mitholma Road | 6.00 | 6.00 |
| COMILLA | BURICHONG | 419183004 | Purnamiti Bazar R&H Rd-Rajapur UP Office Rd. | 3.80 | 2.85 |
| COMILLA | CHOUDDAGRAM | 419313015 | Gunabati UP Office(bazar)-Choudhuri bazer(Sukshail) road. | 4.20 | 2.70 |
| COMILLA | CHOUDDAGRAM | 419313017 | Alkara UP office-Ranir bazar-Rajballovpur bazar Rd. | 4.60 | 5.25 |
| COMILLA | DAUDKANDI | 419363005 | Dakshin Elliotganj UP Office (Elliotganj G.C.)-Mohamadpur Natunbazar via Kalasona bazar Road | 7.25 | 4.86 |
| COMILLA | LAKSHAM | 419723004 | Bizra-Laksam Rd. | 8.82 | 9.75 |
| COMILLA | MURADNAGAR | 419813009 | Kurbanpur - Kaligonj Road | 9.75 | 2.66 |
| COMILLA | NANGALKOT | 419873008 | Adra-Volainbazar-Chatitala-Ghoramaidan-Manikmura Rd. | 8.40 | 4.40 |
| COX'S BAZAR | CHAKORIA | 422163001 | Harbung Baraitali Road | 7.00 | 6.80 |
| COX'S BAZAR | CHAKORIA | 422163006 | Kakara-Surajpur Manikpur Yangacha connecting Road. | 9.50 | 2.31 |
| COX'S BAZAR | COX'S BAZAR-S | 422243003 | Eid Gaon G.C-Gomatoli Bazar Via Pokkali U.P | 10.18 | 5.90 |
| COX'S BAZAR | COX'S BAZAR-S | 422243005 | P.M Khali U.P office-Kuruskul U.P office (X-Mitlitary Road) | 7.00 | 2.70 |
| COX'S BAZAR | RAMU | 422663007 | Chakmarkul-Montergoda(P.M Khali) Road. | 6.00 | 2.04 |
| FENI | CHHAGALNIYA | 430143001 | Mohamaya UP (Chandgazi Bazar)-Diabibi Road via Bangla Bazar, Mohamaiya Gat Road st. Mohamaiya UP & end | 9.38 | 4.37 |
| FENI | SONAGAZI | 430943003 | Charcandia UP-Sonagazi Up via Via Bhuyanrhat,Modinabazar,BRRI&Bahadderhat Road. | 12.30 | 4.00 |
| FENI | FULGAZI | 430953014 | Gabtala-Paithara-Munshirhat road. | 10.15 | 5.23 |
| LAXMIPUR | LAXMIPUR-S | 451433036 | Hazirpara-Dasherhat Road | 6.80 | 7.95 |
| LAXMIPUR | RAIPUR | 451583011 | Kazir Char-Mitali-Bazar-Char-Kasia-Road. | 10.70 | 4.32 |
| LAXMIPUR | RAMGATI | 451733006 | Bangla bazar-Charsekander-Sufir hat Road. | 10.20 | 8.39 |
| LAXMIPUR | KOMOL NAGAR | 451743004 | Goni Ramiz Alam Road.[From 5 No Beri to 2 No & 1 No up ] Road. | 16.50 | 2.00 |
| NOAKHALI | COMPANIGANJ | 475213004 | Talmohammadar hat-Pashkar hat-Char Kasspia Bhumihin Bazar | 8.20 | 3.45 |
| NOAKHALI | KABIR HAT | 475903009 | Shahajir hat-Char Algi bazar Road. | 8.30 | 2.23 |
| Noakhali | Subarna Char | 475893006 | Chor Amanullah UP Office-Khaserhat-Banglabazar-Karimbazar Road. | 15.20 | 3.00 |
| HABIGANJ | CHUNARUGHAT | 636263002 | Shatiajuri UP Office-Ranigaon UP-Mirashi notun bazar Road. | 8.00 | 2.50 |
| HABIGANJ | CHUNARUGHAT | 636263005 | Chanbangha bazar-Shankhola U.P Office via Barkota road. | 8.50 | 4.15 |
| HABIGANJ | MADHABPUR | 636713002 | Montala-Kashim nagar Rail Station-Horashpur road | 7.15 | 3.00 |
| MOULVIBAZAR | BARLEKHA | 658143001 | Kathaltali-Madhabkunda Road | 7.75 | 12.00 |
| MOULVIBAZAR | KAMALGANJ | 658563007 | Adampur U.P.office-Alinagarbazar Road via Changaon Jangalia | 12.00 | 5.20 |
| SUNAMGANJ | JAMALGANJ | 690503002 | Sachna hat-Ramnagor bazar via Sachna Bazar UP Office Road | 8.20 | 3.30 |
| SYLHET | SYLHET-S | 691623005 | Jalalabad UP-Kalirgaon bazar Road. | 5.70 | 4.50 |
| SYLHET | ZAKIGANJ | 691943005 | Mayakhali Bazar - R&H (Barohal UP Office) via Hatubili Madrasha Road | 4.50 | 4.50 |
| **93** | | | | **768.43** | **499.94** |

**Table 7.6: List of Candidate UZR Roads**

| District | Upazila | Road Code | Road Name | Total Length (km) | Total Earth (km) |
|---|---|---|---|---|---|
| PABNA | CHATMOHAR | 176222004 | Chatmohar R & H at Janata Bank to Mirjapur GCM Via Noornagar | 2.60 | 2.00 |
| PABNA | CHATMOHAR | 176222006 | Mirjapur GCM-Chhaikola GCM via Bardanagar, Langolmara & Charnabin Road | 10.00 | 10.00 |
| PABNA | FARIDPUR | 176332004 | Faridpur UZ H/Q-Bhangura UZ H/Q Rd. (Via B.L. Bari Up. Office) | 9.50 | 7.58 |
| SERAJGAN | KAMARKHAN | 188442007 | Alokdiar (Jamtoil) - Shomeshpur (Blekuchi Upazila) GC Road | 3.70 | 3.70 |
| SERAJGAN | KAZIPUR | 188502006 | Shimuldair RHD-Harinathpur GC. | 6.13 | 5.41 |
| SERAJGAN | KAZIPUR | 188502009 | Sonamukhi GC-Upazila HQ Via Alampur Chowrasta. | 8.55 | 6.25 |
| SERAJGAN | RAIGANJ | 188612007 | Nimgachi GC-Sheerpur via Shaliagari-Bhabanipur (Raigong part) | 9.60 | 3.30 |
| SERAJGAN | RAIGANJ | 188612011 | Shimla NHW-Katagari GC | 12.17 | 2.25 |
| SERAJGAN | SHAZADPUR | 188672012 | Talgachi GC-Krishokgong GC via Nolshondha hat. | 3.60 | 3.60 |
| SERAJGAN | TARASH | 188892011 | Katagari hat G.C.-Ranir hat (Tarash Part) | 3.92 | 3.92 |
| SERAJGAN | ULLAPARA | 188942011 | Goyhatta GC-Kuchiamara R&H | 7.00 | 3.90 |
| DHAKA | DHAMRAI | 326142015 | Dhantara GC to Pakutia GC (Nagarpur, Tangail) Road | 18.00 | 15.20 |
| DHAKA | NAWABGANJ | 326622005 | Paragram GC to Kolatia GC rd via Dhalikandi F.Ghat (N.Por). | 4.65 | 3.00 |
| DHAKA | NAWABGANJ | 326622015 | Komorgonj G.C - Paragram G.C via Koilail U.P road. | 7.50 | 5.90 |
| GAZIPUR | KALIAKOIR | 333322007 | Boardghar (R&H)-Chandabaha G.C. | 15.83 | 13.83 |
| GAZIPUR | KALIAKOIR | 333322008 | Latifpur Bridge (R&H)-Vowel Mirzapur G.C. via Boraibari | 15.00 | 12.90 |
| GAZIPUR | SREEPUR | 333862010 | Goshinga-Rajabari | 10.90 | 5.00 |
| JAMALPUR | DEWANGANJ | 339152002 | Bagharchar-Sanandabari Hat via Goalkanda Rd. | 4.20 | 4.20 |
| JAMALPUR | ISLAMPUR | 339292001 | Islampur-Benuarchar GC Rd. | 12.91 | 12.61 |
| JAMALPUR | ISLAMPUR | 339292008 | Islampur-Jhagrarchar GC Rd. | 12.95 | 11.85 |
| JAMALPUR | JAMALPUR-S | 339362003 | Nandina G.C-Dhanbari G. C Road [ Jamalpur part]. | 21.30 | 13.05 |
| JAMALPUR | MELENDAH | 339612015 | Ambaria R&H to Pachabohola GC via Ruknai bazar. | 9.00 | 6.07 |
| KISHOREG | KARIMGANJ | 348422003 | Karimganj-Tarail GC Road | 3.66 | 2.14 |
| KISHOREG | KARIMGANJ | 348422006 | Guzadia bazar-Tarail R&H Road via Raijani | 4.66 | 2.64 |
| KISHOREG | KISHOREGANJ | 348492009 | Nilgonj GC to Kishorejong Mymensingh Road | 4.96 | 3.58 |
| KISHOREG | TARAIL | 348922003 | Tarail-Karimgonj Road | 5.45 | 4.55 |
| MANIKGA | GHIOR | 356222008 | Ghior-Tepra Via Baratia Bazar Road | 8.38 | 2.87 |
| MANIKGA | HARIRAMPUR | 356282005 | Jhitka G.C-Kanchanpur,Balla (Arua) G.C.road. | 7.35 | 6.33 |
| MUNSHIGA | GAZARIA | 359242004 | Bausia NH Road - Kali Bazar Hat (Eng. Staff College Road) | 4.85 | 4.05 |
| MUNSHIGA | SREENGAR | 359842011 | Sreenagar GC- Satvita Hat GC (Dohar) via Gadighat bazar, Chatrabough Bazar | 9.15 | 8.92 |
| MUNSHIGA | DHOBAURA | 361162011 | Kalsinduri Gc-Purakandulia Gc Via Bathgashia & Moulove Bazar Rd:[st: Kolsindur Gc] | 15.00 | 15.00 |
| MYMENSIN | FULBARIA | 361202006 | Hatkalir Bazar to Patira Bazar R&H via Keshoregonj GC | 14.55 | 14.00 |
| MYMENSIN | GAFFARGAON | 361222008 | Kandipara-Goyeshpur Rd. | 12.40 | 12.40 |
| MYMENSIN | HALUAGHAT | 361242001 | Haluaghat-Nalitabari Rd. | 8.49 | 6.46 |
| MYMENSIN | MYMENSINGH | 361522011 | Dapunia GC-Myn.Tangail R&H Rd. at khagdohar via Sarkari pukurpar | 8.80 | 7.44 |
| MYMENSIN | MUKTAGACH | 361652009 | Chechua-Khamarer Bazar Road Via Mogaltola & Syedpara Bazar Road. | 10.50 | 8.81 |
| MYMENSIN | PHULPUR | 361812004 | Taldighi R&H-Munshir hat GC Rd. | 17.00 | 11.58 |

## Table 7.7: List of Candidate UZR Roads (Cont.)

| District | Upazila | Road Code | Road Name | Total Length (km) | Total Earth (km) |
|---|---|---|---|---|---|
| NARAYAN | ARALHAZAR | 367022001 | Araihazar-Elomdi-Jangalia Bazar-Uchitpura. | 11.32 | 8.49 |
| NARAYAN | RUPGANJ | 367682008 | Damra GC-Chanpara-Baraid via Kamshair Rd. | 9.40 | 7.64 |
| NARSHING | RAIPURA | 368642003 | Gopinathpur-Hasnabad upto Thana Border Rd. | 15.30 | 2.00 |
| NETROKO | KALMAKAND | 372402001 | Kalmakanda GC-Pachgaon GC Road. | 12.45 | 9.95 |
| NETROKO | MADAN | 372562003 | Teosree GC-Taral GC (Dhankunia Ferry Ghat) road via Akarsree & Singher Bazar | 15.56 | 9.48 |
| NETROKO | NETRAKONA- | 372742009 | Net.-Mym.R&H (Challisha)-Simulkandi GC Road | 6.10 | 6.10 |
| SHERPUR | JHENAIGATI | 389372002 | Gobindagonj GC-Paglarmore | 4.05 | 3.55 |
| SHERPUR | JHENAIGATI | 389372006 | Jhenaigati GC - Nuton Bazar Border road via Bakakura bazar road. | 9.60 | 8.60 |
| SHERPUR | NAKLA | 389672005 | Narayankhola G.C-Austadhar G.C Road. | 3.25 | 3.25 |
| SHERPUR | NAKLA | 389672006 | Chandrakona G.C-Nurundi G.C Road. | 5.00 | 5.00 |
| TANGAIL | GHATAIL | 393282004 | Porabari-Angarkhola-Garo Bazar Road | 21.25 | 20.84 |
| TANGAIL | KALIHATI | 393472001 | Kalihati (Dhunail)-Shayahat-Hatia JBA Road | 9.85 | 7.93 |
| TANGAIL | MAHDPUR | 393572011 | Birtibari R&H (Modhupur Upazila) - Dhanbari GC via Zagirachala Road | 8.71 | 8.71 |
| TANGAIL | MIRZAPUR | 393662003 | Hatubhanga-Kaliakore-Fulbaria Road via Khatar Hat road. | 14.25 | 10.95 |
| TANGAIL | NAGARPUR | 393762006 | Nagarpur HQ-Louhati GC Via Khamardhalla Road | 8.70 | 3.74 |
| TANGAIL | SHAKHIPUR | 393852005 | Barachowna GC-Bhandeshwar GC via Indrajani GC Road | 12.86 | 12.86 |
| TANGAIL | DHANBARI | 393962009 | Dhanbari-Nandina Road | 6.40 | 5.90 |
| B.BARIA | AKHAURA | 412022004 | Mogra Bazar (GC)-Satpara R&H Road via Kornel Bazar,Dhaturpohela | 9.00 | 2.70 |
| B.BARIA | BANCHARAM | 412042004 | Bancharampur H/Q-Morichakandi GC via Dariadaulat UP & Kadamtali | 11.29 | 7.54 |
| B.BARIA | BANCHARAM | 412042006 | Morichakandi GC - Doshani R&H Road via Kanainagar, Charmorichakandi, Santipur, Ichapur & Shibpur road. | 12.00 | 12.00 |
| B.BARIA | B.BARIA-S | 412132006 | Panchabati R&H road-Akhaura Bara bazar road. (Haliday road) | 7.36 | 2.96 |
| B.BARIA | B.BARIA-S | 412132009 | Nurpur GC-Kalibari R&H (B.Baria) Rd. | 9.67 | 7.52 |
| B.BARIA | KASBA | 412632004 | Tinlacpir R&H to Shimrail GC via Chargas Bazar & Bhallabpur Road | 13.05 | 3.91 |
| B.BARIA | KASBA | 412632005 | Kharera R&H to Shimrail GC via Kheora Bazar Road | 8.71 | 3.06 |
| B.BARIA | NABINAGAR | 412852004 | Nabinagar-B.Baria Rd.-Border of Sadekpur U.P | 6.36 | 6.36 |
| B.BARIA | NASINAGAR | 412902002 | Nasirnagar R&H-Bholakot Bazar-Chatalpar GC-Aurail Road (Nasirnagar Part) | 20.69 | 17.89 |
| CHANDPU | HAMISHAR | 413472006 | Haimchar Upazila H/Q-Madina market R&H via Ananda bazar Road. | 5.10 | 3.50 |
| CHANDPU | HAZIGANJ | 413492007 | Belchow-Ramchanrapur-Sameshpur-Nadighat Rd. | 8.00 | 8.00 |
| CHANDPU | SHAHRASTI | 413952002 | Thakur bazar (U.H.C) GC-Jadabpur R& H Net work. (Ch. 00-1700m, 2200-3860m & 9470-9450m) | 9.45 | 5.98 |
| CHITTAGO | ANWARA | 415042007 | Hazrat Mohsen Awalia Gahira Road - Fakirhat-Dhatghat road | 14.30 | 4.27 |
| CHITTAGO | FATIKCHARI | 415332002 | Heako G.C. to Sikdarkhil Road | 4.00 | 3.50 |
| CHITTAGO | FATIKCHARI | 415332007 | Mohammed Takirhat G.C.to Katirhat Road via Samitirhat Bazar (Fatickchari portion) | 7.05 | 2.25 |
| CHITTAGO | LOHAGARA | 415472003 | Chunati pantissa via narinna chandah patial para road | 11.02 | 8.33 |
| CHITTAGO | MIRSHARAI | 415532009 | Borer Hat-Sitakunda Mirer Hat G.C. Road | 3.95 | 2.84 |
| CHITTAGO | PATIYA | 415612005 | Uzirpur Road | 12.00 | 9.99 |
| CHITTAGO | RANGUNIA | 415702005 | Kalurghat-Sarandeep-Banderjari-Sharafvatta Rd (Rangunia Part) (From RHD #96) | 6.20 | 6.20 |
| COMILLA | BARURA | 419092007 | Baichapukuria-Adda Bazar-Kachua Road | 18.00 | 2.96 |
| COMILLA | BRAHMANPA | 419152003 | Baradushia R&H-Dulalpur Bazar GC Rd. | 6.04 | 5.54 |

## Table 7.8: List of Candidate UZR Roads (Cont.)

| District | Upazila | Road Code | Road Name | Total Length (km) | Total Earth (km) |
|---|---|---|---|---|---|
| COMILLA | BURICHONG | 419182004 | Comilla- Mazigacha Palpara-B. Para-Mirpur Rd | 17.30 | 14.75 |
| COMILLA | BURICHONG | 419182011 | Abidpur GC-Debpur bazar (Gakkhur) RHW Road. | 4.60 | 2.44 |
| COMILLA | CHOUDDAGRA | 419312008 | Upazila H/Q (Nabagram)-Munshirhat-Kashinagar UP-Suagonj(Isshor Mazumder) Road | 22.30 | 6.10 |
| COMILLA | DEBIDWAR | 419402008 | Debidwar G.C to Dulalpur G.C via.Abdullapur (Debidwar Portion) | 11.39 | 8.19 |
| COMILLA | DEBIDWAR | 419402013 | Debidwar-Pirgonj GC via Rosulpur UP Road. | 11.49 | 11.49 |
| COMILLA | COMILLA-S | 419672009 | Dhaka-Chittagong highway- Comilla University | 3.00 | 3.00 |
| COMILLA | MURANDNAG | 419812007 | Chandla GC to Sonarampur Road via Madabpur, Jangar, Dalfa, Hatbalibari | 9.50 | 9.50 |
| COMILLA | TITAS | 419892003 | Gouripur - Jiarkandi - Bakhrabad(Muradnagar)Road.(From RHD#189) | 9.00 | 6.90 |
| COMILLA | MONOCHORG | 419902007 | Monohorgonj GC -Laksmanpur- Bipulasar R&H Rd. | 13.50 | 7.70 |
| COMILLA | COMILLA-S DA | 419912010 | Rajeshpur-Kamalpur-Nalkuri-Matiara-Srimantapur-Chandpur ROAD | 24.60 | 6.49 |
| FENI | FENI-S | 430292016 | Fazilpur-Bhorerbazar-Nababpur Road (From RHD #248) | 7.48 | 3.73 |
| LAXOMPU | RAMGATI | 451732007 | Torabganj GC - Shantirhat - Hajiganj Bazar - Banderhat - Chowdhuryhat - Ramgati Bazar Road | 26.00 | 12.67 |
| NOAKHAL | NOAKHALI-S | 475872004 | RHD (Uttar Wapda Bazar)-Karamullah road. | 10.10 | 3.50 |
| NOAKHAL | NOAKHALI-S | 475872011 | Karamullah-Underchar- Fazumiarhat - lauranch Khasher hat Road. | 11.00 | 8.85 |
| HABIGANJ | BANIACHONG | 636112001 | Hobigonj-Baniachong R&H Road (Chilapanja)-Azmiregonj gc Road via Shibpasha | 6.65 | 3.35 |
| HABIGANJ | CHUNARUGHA | 636262004 | Pakuria Battala-Asampara bazar Via Rema Tea garden. | 22.30 | 9.23 |
| HABIGANJ | CHUNARUGHA | 636262005 | Talimpur RHD-Azimganj GC via Talimpur Up Office | 14.30 | 10.13 |
| MOULVIBA | BARLEKHA | 658142007 | Talimpur RHD-Azimganj GC via Talimpur Up Office | 8.25 | 4.75 |
| MOULVIBA | SREEMANGAL | 658832006 | Shindurkhan-khejuricherra bazar Road | 4.50 | 4.50 |
| SUNAMGA | CHATAK | 690232003 | Kalipur to Pagla-Jagannathpur RHD via Haiderpur | 13.60 | 6.30 |
| SUNAMGA | CHATAK | 690232004 | Chattak-Doara via Ambari Rd. | 10.35 | 4.35 |
| SUNAMGA | DERAI | 690292005 | Derai-Jagannathpur via Jagdal Bhurakhali Road | 14.40 | 10.06 |
| SUNAMGA | DHARMAPASH | 690322001 | Dharmpassa-Joysree Road. | 11.33 | 6.83 |
| SYLHET | BALAGANJ | 691082005 | Kasrupur bazar GC-Pailanpur-Balaganj GC Road. | 21.50 | 13.24 |
| SYLHET | BEANIBAZAR | 691172006 | Beanibazar-Sarupar Gc - Sylhetypara RHD - Gojukata Road. | 21.73 | 8.48 |
| SYLHET | BISWANATH | 691202009 | RHD Rampasa-Lamachalk-Bairagir Bazar GC Road | 4.00 | 4.00 |
| SYLHET | KANAIGHAT | 691592006 | Haripur GC-Gachbari GC Road. (Kanaighat part) | 9.67 | 7.07 |
| SYLHET | SYLHET-S | 691622006 | Khadimnagar RHD-Shaheber bazar GC Road. | 9.44 | 8.24 |
| **103** | | | | **1074.78** | **734.42** |

## Table 7.9 : List of Candidate Ghats For Project Area

| | District | Upazilla | Name Of Ghat | Name Of Major Connecivity |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | Gazipur | Sreepur | Borni Bazar Ghat | Sitalakkha River, Borni Gcm, Borni Up |
| 2 | Narayanganj | Rupganj | Murapara Moterghat | Shitalakha River |
| 3 | Munshiganj | Sirajdikhan | Balucharbazar Ghat | Dhalewary River, Gcm |
| 4 | Narayanganj | Sadar | Fatulla Gcm Ghat | Buriganga River |
| 5 | Netrokona | Kalmakanda | Kalmakanda Godown Ghat | Ubdakhali River, Food Godown, Upazila Hq. Kalmakanda Gcm |
| 6 | Kishoreganj | Itna | Alongjuribazar Ghat | Dhono River |
| 7 | Gazipur | Kaliganj | Shaheed Moyezuddin Ferry Ghat | Rural Market |
| 8 | Munshiganj | Sreenagar | Sreenagar Ghat | Sreenagar Gcm |
| 9 | Kishoreganj | Austogram | Abdullapurbazar Ghat | Meghna River |
| 10 | Jamalpur | Sharishabari | Boriakul Ghat | Boira Gcm, Aramnagar Gcm, Tarakandi Bazar |

**Table 7.10 : List Of Candidate Ghats On Pilot Rural Waterways Transport Component**

| | District | Upazilla | Name Of Ghat | Name Of Major Connecivity |
|---|---|---|---|---|
| 1 | Gazipur | Kaliakoir | Kaliakoir Bazar Ghat | Turag River, Kalikoir Gcm, Baroibari Gcm, Chabagan Bazar |
| 2 | | | KODALIA GHAT | |
| 3 | | | HATUBHANGA GHAT- ADJACENT TO GCM | |
| 4 | Gazipur | Sadar | Mirzapur Ghat | Turag River, Mirzapur Gcm |
| 5 | | | BATIKANDI GHAT- ADJACENT TO GCM | |
| 6 | | | CHAR KUMERIA GHAT | |
| 7 | | | KHATALIA GHAT | |

**Table 7.11: List of Candidate GCMS**

| | District | Upazila | Selected GCM | | District | Upazila | Selected GCM |
|---|---|---|---|---|---|---|---|
| 1 | Dhaka | Nawabganj | Gobindapur | 25 | Sherpur | Nalitabari | Nayabil |
| 2 | Gazipur | Kaliganj | Shaoraid | 26 | | Sherpur Sadar | Dhala |
| 3 | Manikganj | Saturia | Umanandapur | 27 | Habiganj | Madhabpur | Choumohani, |
| 4 | Munshiganj | Sirajdikhan | Sirajdikhan | 28 | Moulvibazar | Borolekha | Chandgram, |
| 5 | | Sreenagar | Tantor Nowapara | 29 | | Kamalganj | Bhanugach, |
| 6 | Narayanganj | Araihazar | Araihazar, | 30 | Sunamganj | Biswamvarpur | Biswamvarpur |
| 7 | Narshindi | Monohardi | Hatirdia | 31 | | Chatak | Hyderpur |
| 8 | | Shibpur | Jallara | 32 | | Jagannathpur | Raniganj |
| 9 | Pabna | Bera | Nakalia, | 33 | Sylhet | Balaganj | Dewan Bazar, |
| 10 | | Sujanagar | Nazirganj, | 34 | | Zakiganj | Laxmipur, |
| 11 | Sirajganj | Kamarkhand | Jamtali | 35 | Brahmanbaria | Ashuganj (before Sada | Talsahar, |
| 12 | | Shahzadpur | Baghabari | 36 | Chandpur | Chandpur Sadar | Mohamaya |
| 13 | Tangail | Basail | Ishorganj | 37 | | Matlab | Chengarchar, |
| 14 | | Dhanbari | Dhanbari | 38 | Comilla | Chandina | Badarpur |
| 15 | Jamalpur | Jamalpur Sadar | Kapasata Hajipur, | 39 | | Comilla Sadar | Kalir Bazar, |
| 16 | | Melandah | Durmut | 40 | | Laksham | Juktikhola |
| 17 | Kishoreganj | Austagram | Sabinagar | 41 | Feni | Feni Sadar | Panchgachiya Hat |
| 18 | | Mithamoin | Telikhai | 42 | | Parshuram | Fulgazi |
| 19 | Mymensingh | Fulbaria | Dewkhola, Mahammadnagar | 43 | Chittagong | Lohagara | Adhunagar Khan Hat |
| 20 | | Gaffargaon | Ambitala | 44 | | Patia | Budhpura hat GC, |
| 21 | | Trishal | Chakrumpur | 45 | | Raojan | Gourisanker hat |
| 22 | | Khaliajuri | Krishnapur, | 46 | | Sandwip | Bakter Hat, |
| 23 | | Kalmakanda | Bishorpasha | 47 | | Sitakunda | Fakir Hat, |
| 24 | | Purbadhala | Hogla, | 48 | Cox's Bazar | Ramu | Beltoli Boro Bazar |
| | | | | 49 | | Teknaf | Whykong, |

## Annex 8: Economic Analysis
## Bangladesh: Second Rural Transport Improvement Project (P123828)

1. A Cost-benefit analysis has been carried out for the main investments components of the project: (i) Rehabilitation and Periodic Maintenance (including pilot for PBMC), and Upazila and Union Roads Improvement; (ii) GMC and ghats improvement; and (iii) RWT improvement. The sections below describe the methodology, main results of the economic appraisal, and sensitivity analysis for each of the component.

### A. RMP and Upazila and Union Roads Improvement components:

i) Methodology and main assumptions:

2. A cost-benefit analysis was carried out for the candidate roads identified under the UZR and UNR improvement component. Only roads for the first year of the RPM component have been selected, therefore the cost-benefit analysis is limited to those identified roads.

3. Both, the RPM and road improvement components are expected to produce benefits of the form of improved access for rural communities in the area of project influence, reduced transport cost for the road users, more efficient marketing of rural products, and ultimately increased employment and income generation. The benefits have been compared with the economic costs of the roads sub-projects components over the project life (assumed to be 20 years), in order to determine their economic internal rates of return (EIRR), and economic net present values (ENPV).

4. The project life was assumed to be inclusive of the construction and maintenance periods for each improved asset and thus defined the period for the project appraisal. In the case of the roads sub-projects, a construction period of 18 months was assumed.

ii) Measurement of economic costs:

5. Recent biddings and contract rates for LGED projects which now being implemented were used as the basis for computing the ***average unit capital costs*** to be applied in the appraisal of selected RTIP-II sub-projects, inflated to mid-2012 values. However, for some UZR improvement sub-projects for which detailed survey, design and cost estimation has been completed, these cost estimates have been used. These unit costs, expressed in financial values, were converted to economic values through the application of a Shadow Pricing Factor (SPF).

6. In previous LGED projects, a standard SPF of 0.80 was applied in order to remove the tax and duty components, as well as to adjust for any market distortions (such as subsidies) in financial prices. To ensure consistency with other projects, a SPF of 0.80 was used for the determination of economic costs in RTIP-II. At this level, the SPF makes adequate allowance for the importation of some construction materials (such as asphalt) which will carry higher rates of tax.

**Table 8.1: Calculation of economic unit construction costs, RTIP-II**

| Project type | Unit | Unit construction cost (financial) Taka mill. | SPF | Unit construction cost(economic) Taka mill. |
|---|---|---|---|---|
| Improvement of upazila roads | km | 11.60 | 0.80 | 9.28 |
| Improvement of union roads | km | 5.925 | 0.80 | 4.74 |
| Rehabilitation/maintenance of upazila roads, including bridges/culverts | km | 3.45 | 0.80 | 2.76 |

Source: Recent LGED projects
Note: The unit costs include allowance for the costs of monitoring and supervision of construction works.

7. The economic appraisal must also make allowance for the annual maintenance of the improved infrastructure. The ***financial costs of annual maintenance*** were obtained from the LGED database maintained by RIMMU (Road Infrastructure Management and Maintenance Unit) and were converted to economic costs through application of an SPF of 0.80. The costs used are:

**Table 8.2: Financial Costs of Annual Maintenance**

| Category | Description/Cost |
|---|---|
| Routine Maintenance of UZR: | Off-pavement Tk. 32,926 per km per annum, on pavement patching Tk. 67,214 per km per annum, total Tk. 100,130 per km annually, economic cost Tk. 80,100. |
| Routine Maintenance of UNR: | Cost reduced to reflect narrower pavement standard of 3.0m width for UNR, 3.66m width for UZR, average Tk. 83,200 per km annually, economic cost Tk. 64,000. |
| Periodic Maintenance of UZR: | Tk. 2.024 million per km, assumed five-year cycle, economic cost Tk. 1.62 million. |
| Periodic Maintenance of UNR: | Again, cost reduced to reflect narrower pavement standard, Tk. 1,656 million per km and five-year cycle, economic cost Tk. 1.325 million. |

iii) Measurement of Economic Benefits:

8. The economic benefits of the project were assessed for the three categories of roads sub-projects – improvement of UZR, improvement of UNR, and rehabilitation and periodic maintenance (RPM) of UZR and UNR. For the rural population of the target area, these benefits include:

- Increased incomes and reduced poverty, as a result of improved mobility and better access to markets, as well as to health, education and government services;
- Increased employment; and
- Lower transportation and vehicle operating costs.

9. The overriding purpose of RTIP-II, as is the case with any rural infrastructure project, is to reduce poverty and stimulate development by increasing the household incomes of impoverished rural communities. This is achieved by improving the access of these communities to markets and other sources of income generation, as well as to health services, education and local government facilities. Thus, of the benefits listed above, increased income represents the

most significant of all benefits resulting from rural transport infrastructure projects. It therefore becomes essential to attempt to measure the impact of projects on the generation of this type of benefit.

10. A lack of adequate information on average household income levels for small administrative areas has in the past prevented measurement of the income increasing benefits of local infrastructure projects. However, for the purposes of the RTIP-II project, raw data from the 2005 Household Income and Expenditure Survey were accessed in order to generate estimates of average household income by upazila in 2005[16]. These data was then extrapolated for 2011 using GDP growth rate and inflation price index.

11. In addition, sufficient data have now been collected in relation to the income-increasing impacts of earlier or on-going projects to provide guidance for the estimation of such benefits in this and future projects. For example, both the *Long-run Socio-Economic Impact Study of RRMIMP II*[17] and the *Socio-Economic Monitoring and Evaluation (SEME) Report of RTIP-I*[18]contain detailed assessments of the impact of rural transport infrastructure projects on poverty reduction, employment and income generation.

12. In particular, the SEME study for RTIP-I uses baseline and post-implementation project and control data to measure the impact of the project on average family income and expenditure in the project area. The report of this study also provides an assessment of the employment generating impact of the project, both in terms of the direct employment associated with the construction and maintenance of infrastructure projects and the indirect employment induced by these projects. Table 8.3 below shows the "before and after project" average household income for 22 project upazila roads and for corresponding control roads in the same area.

**Table 8.3: Calculation of differential growth rate of project vs control Household Income**

| Household income by source | Project area | | | Control area | | | Net change |
|---|---|---|---|---|---|---|---|
| | Before | After | % Change | Before | After | % Change | Project/Control |
| Average monthly income from primary industry (Taka) | 1,765 | 4,932 | 179.47% | 1,725 | 4,220 | 144.69% | 14.21% |
| Average monthly income from non-primary industry (Taka) | 4,032 | 5,134 | 27.32% | 4,611 | 5,158 | 11.85% | 13.83% |
| Average monthly income from all sources (Taka) | 5,797 | 10,066 | 73.64% | 6,336 | 9,378 | 48.01% | 17.32% |
| Primary as % of total | 30.4% | 49.0% | | | | | |

Source: SEME Report for RTIP-I (June 2010)

13. The net change in average household income shown in the last column of the above table (14.2 percent for income from primary industry sources and 13.8 percent from non-primary industry sources) was used as the basis for calculating the income increasing benefits for all categories of roads sub-projects in RTIP-II. In the case of RPM sub-projects, however, the

[16] HIES 2010 was not "publicly' available at the time this economic analysis was carried out.
[17] Bangladesh Institute of Development Studies: Long-run Socio-Economic Impact Study of Rural Roads and Markets Improvement & Maintenance Project II – Final Report, January 2009.
[18]Hifab International AB in association with RPMC and Kranti: Socio-Economic Monitoring and Evaluation Report of Rural Transport Infrastructure Project, June 2010.

increase was reduced by half, since the improvement in transport access generated by RPM works was assumed to be less than that of road upgrading works.[19]

14. The rate of increase in average household income was applied to baseline estimates of the average household income in each upazila in order to calculate future average income levels. It should be noted that baseline estimates were not possible for all 224 upazilas in the project area, since the sample used for the Household Income and Expenditure Survey 2005 covered only about half of the 1,000 primary sampling units (PSUs) throughout the country. By comparison, it was possible to assemble raw sample data for 146 out of 224 upazilas (65 percent) in the project area. In the case of upazilas where no income estimates were available, the weighted average income for the relevant district was used.

15. Independently the number of households per project road was calculated in proportion to the project road's share of the total length of upazila and union roads in the upazila. This was done both for the base year (2011) and for twenty years hence (2032). "With" and "Without" project household income totals were calculated both for the base and terminal years by multiplying the household number for the project road by the future and baseline average income levels respectively. Accordingly, the incremental household income for the road project was calculated by deducting the household income for the "Without" case from that of the "With" case. It was assumed a phasing-in of benefits over the initial five years of the project life in accordance with the following percentages: (i) ten percent for the first year (first year of operation); (ii) 30 percent for the second year; (iii) 50 percent for the third year; (iv) 70 percent during the fourth year; and (v) 100 percent during the fifth year.

16. In addition to the increased income for the rural population, a significant benefit for the roads component of RTIP-II is a reduction in Vehicle Operating Costs (VOCs) resulting from qualitative improvements to road surfaces. Such improvements will also allow an increase in average speeds. This may also attract new traffic (generated traffic) and overtime a shift in the modal mix from non-motorized to motorized vehicles. Increased average speeds will also lead to travel time savings. However, this has not been included as a benefit in this study, since travel time savings are reflected in increased household incomes.

17. The VOC benefits of road projects are measured by comparing the Vehicle Operating Cost streams for the "With" and "Without" project cases. In the "Without project" case the road will attract only normal traffic. It will grow from year to year but at a steadily reducing rate as the quality of the road deteriorates. In the "With project" case, the normal traffic using the road will increase year by year at considerably increased rates of growth as the quality of the road improves. The benefits accruing to the normal traffic may be measured as the difference between the unit VOC's for the road in improved and unimproved condition respectively multiplied by the relevant vehicle–km for each vehicle category on the unimproved road. In addition, the improved road will attract new or "generated" traffic, the quantum of which may be estimated by deducting the vehicle-km of the undeveloped road from the vehicle-km of the developed road. Generated traffic represents a type of consumer surplus and its benefits may be measured in

[19] This is assumed to be the case because roads selected for RPM treatment have previously been improved to a relatively high standard and the intention is merely to restore these roads to their original condition. Thus, RPM sub-projects will have a proportionately smaller impact on the improvement of transport access than road upgrading sub-projects.

accordance with the "Rule of a Half", whereby only half of the product of differential vehicle operating costs and of differential vehicle-km is taken as the value of benefits. It is assumed that generated traffic will develop over three years from the first year of operation of the improved road, as follows: (i) 20 percent for the first year; (ii) 60 percent for the second year; and (iii) 100 percent during the third year.

18. Overall VOC savings were found to be substantial in the case of the first RTIP-I project, reducing by 15-25 percent where a road with an IRI of ten was improved and by 40-60 percent where a road with an IRI of 18 was improved.[20] Results from the initial appraisals of RTIP-II road projects indicate a similar order of VOC savings.

19. Due to data limitation, it was not possible to estimate the VOC benefits arising from *diverted traffic* (i.e. traffic which may be diverted from other parts of the road network at a considerable saving in vehicle operating costs). It is likely that the addition of these benefits would result in a substantial increase in project EIRRs. A similar remark could apply in the case of changes in the modal distribution of the traffic on project roads, especially those involving the transfer of traffic from Non-motorized to Motorized forms of transport.

iv) Results of economic appraisal and sensitivity analysis:

20. The detailed economic appraisal was carried out for each proposed roads sub-project (See Economic Appraisal background paper for more details). The analysis for each road calculates base case values for EIRR, and ENPV. These results have been subjected to sensitivity tests, involving:

- An increase of 20 per cent in project costs;
- A decrease of 20 per cent in project benefits;
- A combined increase of 20 per cent in project costs and a 20 per cent decrease in project benefits;
- Restriction of benefits to normal and generated traffic (ie. excluding household income benefits);
- Restricting benefits to normal traffic only; and
- Switching value analysis (increased cost and reduced benefits)

*(i) Upazila road improvement*

21. The economic appraisal of the UZR improvement component was carried out for 103 UZR, with a total length to be upgraded of 734 km. In general, these sub-projects have the potential for high economic returns, owing to the fact that most of the candidate roads have undeveloped earthen surfaces and with improvement will have a major impact in terms of expanding community access, generating increased household incomes, reducing roughness, and saving vehicle operating costs. The weighted average EIRR is **41 percent** and all the roads appraised have a base case EIRR greater than 12 percent. The weighted average is ENPV of US$348 million. The results are robust if cost increases up to 118 percent or benefit decreases up to 54 percent. However, when the benefits exclude the income benefits, the viability of the component is below the 12 percent threshold.

[20] World Bank, *Project Appraisal Document on a Proposed Credit in the Amount of SDR 138 milliom (US$ 190 million equivalent) to the People's Republic of Bangladesh for the Rural Transport Improvement Project,* May 22, 2003.

**Table 8.4: Economic returns of upazila road improvement sub-projects**

Table: EIRR, NPV and sensitivity analysis for UZR Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | | | Switching Value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Existing and generated traffic only (No Income Benefits) | Existing Traffic only (no income benefits) | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 41% | $ 348 | 31% | 30% | 27% | 14% | 10% | 118% | 54% |

Note: These figures are weighted average using number of kms as weight

*(ii) Union road improvement*

22. The results of the economic appraisal of UNR improvement was carried out for 94 roads with a total length to be upgraded of 497 km. The weighted average EIRR is 84 percent and all the road links appraised have a base case EIRR greater than 12 percent, in most cases substantially greater. The weighted average ENPVs is about US$295 million. All but one (Khanmorich UP HQ - Mirzapur GC Road) remain viable even if costs increase up to 168 percent or benefits decrease up to 65 percent. However, again, for a significant proportion of the roads the results are sensitive when the benefits from increases in household income are excluded.

**Table 8.5: Economic returns of union road improvement sub-projects**

Table: EIRR, NPV and sensitivity analysis for UNR Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | | | Switching Value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Existing and generated traffic only (No Income Benefits) | Existing Traffic only (no income | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 84% | $ 295 | 57% | 56% | 50% | 27% | 22% | 168% | 65% |

Note: These figures are weighted average using number of kms as weight

*(iii)Rehabilitation and periodic maintenance of upazila and union roads*

23. A cost-benefit analysis was carried out for the 98 roads identified for the first year of the RPM component. This includes a total length of about 965 km (out of 3,500 km for the five years project). The weighted average EIRR is 64 percent and all the links appraised have a base case EIRR greater than 12 percent, in many cases substantially greater, with a weighted average ENPVs of about US$199 million. All roads remain economically viable if costs increase up to 146 percent or benefits decrease up to 60 percent. However, again, for some of the roads the results are sensitive when the benefits from increases in household income are excluded.

**Table 8.6: Economic returns of First Year of RPM sub-projects**

Table: EIRR, NPV and sensitivity analysis for RPM Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | | | Switching Value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Existing and generated traffic only (No Income Benefits) | Existing Traffic only (no income | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 64% | $ 199 | 46% | 45% | 39% | 24% | 22% | 146% | 60% |

Note: These figures are weighted average using number of kms as weight

*(iv) Performance Based Routine Maintenance Contracts pilot*

24. A cost-benefit analysis was carried out for ten roads identified for the first year of the PBMC component. This includes a total length of about 167 km (out of 450 km for the five years project). The weighted average EIRR is 40 percent and all the links appraised have a base case EIRR greater than 12 percent, in many cases substantially greater, with a weighted average ENPV of about US$8 million. All roads remain economically viable if costs increase up to 136 percent or benefits decrease up to 42 percent. However, again, for some of the roads the results are sensitive when the benefits from increases in household income are excluded.

**Table 8.7: Economic returns of First Year of PBMC sub-projects**

Table: EIRR, NPV and sensitivity analysis for PBMC Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | | | Switching Value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Existing and generated traffic only (No Income Benefits) | Existing Traffic only (no income | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 40% | $ 8 | 32% | 30% | 22% | 17% | 15% | 136% | 42% |

Note: These figures are weighted average using number of kms as weight

## B. GMC (and ghats) improvement Components:

i) Methodology and main assumptions:

25. A total of 50 Growth Centre Markets (GCMs) and 20 ghats (boat landing stations) have been selected for improvement within the RTIP-II project. The improvement of GMCs and ghats is expected to bring significant benefits in the form of improved access and reduced transport cost for impoverished rural communities, as well as, more efficient marketing of rural products. Since the rural market network in Bangladesh historically developed on the myriad of navigable waterway routes, it is often the case that important ghats are located adjacent to the markets. The ghats has therefore been regarded as an integral part of the GCMs, connecting the waterways and land transport as a hub for economic activity.

26. The benefits of GCMs have been compared with the economic costs of the total capital investment and maintenance cost over the life of the project (assumed to be 20 years) in order to determine their economic internal rates of return (EIRR), and economic net present values (ENPV). The project life was assumed to be inclusive of the construction and maintenance periods for each improved asset and thus defined the period for the project appraisal. A construction period of 18 months was assumed.

ii) Measurement of Economic Costs:

27. Recent biddings and contract rates for LGED projects now being implemented were used as the basis for computing the average unit capital costs of GCMs and ghats improvement investments. These unit costs, expressed in financial values, were converted to economic values through the application of a Shadow Pricing Factor (SPF). In previous LGED projects, a standard SPF of 0.80 was applied in order to remove the tax and duty components, as well as to adjust for any market distortions (such as subsidies) in financial prices. To ensure consistency with other projects, a SPF of 0.80 was used for the determination of economic costs. At this level, the SPF

makes adequate allowance for the importation of some construction materials (such as asphalt) which will carry higher rates of tax.

**Table 8.8: Calculation of economic unit construction costs, RTIP-II**

| Project type | Unit | Average Unit construction cost (financial) Taka mill. | SPF | Average Unit construction cost(economic) Taka mill. |
|---|---|---|---|---|
| Improvement of growth centre markets | no. | 6.2240 | 0.80 | 4.9792 |
| Construction of landing stations with goods/passenger handling facilities | no. | 6.9649 | 0.80 | 5.5720 |

*Source: Recent LGED projects*

28. It should be noted that these unit costs include allowance for the costs of monitoring and supervision of construction works. The costs of GCM annual maintenance were assessed at six percent of capital cost.

iii) Measurement of economic benefits:

29. The economic benefits of the GMC and ghats component includes: (i) increased produce sales and lower spoilage rates in growth centre markets; and (ii) lower transportation and vehicle operating costs.

30. **Increased produce sales and lower spoilage rates in growth centre markets**: The economic benefits derived from the improvement of Growth Centre Markets have been assessed as the reduced spoilage of perishable goods made possible by the construction of market stalls with roofs and concrete floors to provide protection from the elements and from soil contamination, etc. Reduced spoilage has been calculated for each perishable commodity sold as the difference between the value of sales at the maximum selling price and the value of sales at the average selling price. This difference reflects the extent to which prices will reduce as a result of produce deterioration throughout the day. The purpose of the GCM improvement projects is to eliminate the price reduction by eliminating the cause of produce deterioration. Calculation of the economic benefits of these projects depends upon the collection, through field surveys, of a considerable amount of data related to the types, quantities and prices of commodities sold on hat and non-hat days at the markets which have been selected for improvement.

31. **Lower transportation and vehicle operating costs**: The main purpose of upgrading the ghats is to provide social benefits in the form of increased safety and/or comfort and convenience for boat passengers through lower transportation cost and improved connectivity. Nevertheless, estimation of the income increasing benefits of such projects depends upon an ability to measure the number of households within their catchment areas.

iv) Results of economic appraisal and sensitivity analysis:

32. For individual project components, the results of the economic appraisal have been assessed within the ranges as shown below. These results have been subjected to sensitivity tests, involving:

- An increase of 20 percent in project costs;
- A decrease of 20 percent in project benefits;
- A combined increase of 20 percent in project costs and a 20 percent decrease in project benefits; and
- Switching value analysis for increased cost and reduced benefis

33. The type of investments in this component have a relatively low capital cost, which is offset by substantial benefits in the form of the reduced spoilage of produce. The weighted average EIRR is 292 percent with a weighted average ENPV of US$946 million.

34. Unfortunately, only one GMC was clearly connected with a ghat and therefore the economic analysis only includes the cost of the improvement of GMCs. However the results are robust if we include the average cost of the construction and maintenance of a ghat to the cost stream. In the base case scenario, EIRR varies from 20 percent to 1,246 percent and results remain above threshold when benefits are reduced up to 83 percent and costs are increased up to 1,582 percent.

**Table 8.9: Economic returns of Growth Centre market improvement projects**

Table: EIRR, NPV and sensitivity analysis for GMCs Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | Switching Value | |
|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 292% | $ 946 | 243% | 233% | 193% | 1582% | 83% |

Note: These figures are simple average

## C. Rural Water Transportation (RWT) Components:

i) Methodology and main assumptions:

35. A cost-benefit analysis was carried out for the improvement of Turag River extension between Kaliakor (Gazipur District) and Mirzapur (Tangail District). A survey[21] of river traffic was carried out on March 2011 (including hat and non-hat days at the Kaliakor growth centre market) and it has found that approximately 143 boats per day of all types and sizes used the river stretch between the second counting point and Kaliakor on the non-hat day and 158 on the hat day. Of these, heavier motorized cargo boats and motorized passenger boats represented nearly two thirds and 7-14 percent of the total observed traffic, respectively. Of the nearly 100 heavier cargo boats moving per day, all but 25 were estimated to be employed in the transport of sand and silt over very short distances (3.5-5km).

36. Interviews with boat operators and market traders suggested that traffic levels during the low water season would more than double if the obstacles to navigation between Hatubhangar and Gorai/Mirzapur could be removed. Conservatively, it was estimated that an additional 25

[21] S Farooqui: *Baseline Survey on Rural Waterway Transport (RWT) of RTIP II, 09 March 2011.* The survey was conducted at two counting points located respectively at Km 1.5 and Km 3.5 along the project river stretch (where Kaliakor is Km 0).

cargo boats and an additional 20 passenger boats per day would navigate the river stretch on a year-round basis, and that similar numbers of boats would extend their navigation during the low water season, after removal of the obstacles to low water navigation.

**Table 8.10: Estimated RWT traffic per day after project implementation**

| Traffic/ commodity | Origin/Destination | Distance km | Current traffic | Additional number of boats per day (year round) | Extended navigation: number of boats (additional distance) per day during low water season only |
|---|---|---|---|---|---|
| ***Passengers*** | Hatubhangar/ Kaliakor (Current)<br>Gorai/ Kaliakor (Future) | 8<br>18.5 | 25 | <br>20 | 20 (10.5) |
| ***Cargo:*** | | | | | |
| Jute/ bamboo/ timber/ firewood | Hatubhangar/ Bhairab (Current)<br>Gorai/ Bhairab (Future) | 50<br>58 | 25 | <br>18 | 18 (8) |
| Pottery | Chanpur/ Rayerbazar (Dhaka) (Current)<br>Gorai/ Rayerbazar (Dhaka) (Future) | 60<br>68 | 25 | <br>7 | 7(8) |
| | Total | | 75 | 45 | 45 (26.5) |

Source: Consultant's estimate based on traffic survey undertaken in March 2011.
Note: The brackets in the last row indicate the additional distance required by river traffic during the low water season.

37. It was assumed that the economic benefits accruing from the additional traffic would be realized throughout the year and that incremental benefits would be realized from an equivalent number of movements (45 per day) during the dry water season (six months) in the stretch upstream of the existing barrier to navigation. This traffic was believed to be moving already during the high water season.

38. The traffic segments expected to benefit most from the waterway improvement project are:

- *cargo traffic* (notably jute, pottery, bamboo and firewood) moving from Chanpur/Hatubhangar to Dhaka and other destinations downstream of Dhaka (river navigation distance 50-60km as compared with 44-54 km by road); and
- *passenger traffic* between Gorai/Mirzapur and Kaliakor/downstream of Kaliakor (18.5 km by waterway as compared with 16.5 km by road).

39. Longer distance cargo traffic will benefit because road movement of some commodities during the low water season will be avoided at a considerable saving in operating costs. In addition, removal of the obstacles to navigation will divert road traffic, especially of commodities such as pottery which are susceptible to high damage rates if moved by road.

40. In the case of passenger traffic, local communities between Kaliakor and Gorai/Mirzapur have become accustomed to using road transport, despite the relative inaccessibility of some communities to high quality, all-season roads. Nevertheless, there are indications of strong

passenger demand for water transport during the high water season, suggesting that there is a latent demand for water transport during the low water season which might be satisfied by the removal of barriers to navigation. Water transport has an inherent advantage over road transport for passengers seeking to transport goods, in addition to themselves, to and from markets, since bulky goods may be accommodated in boats, but not so easily in the prevailing forms of road transport (such as Tempos and auto rickshaws).

41. The project was appraised over an assumed life of 20 years (with uninterrupted navigation possible during the low water season starting in 2013).

42. The assessment of the current traffic and potential traffic increases are based on a set of assumptions defined in the table below.

**Table 8.11: Main assumption for Cargo transport:**

| | | |
|---|---|---|
| Traffic growth factor | 4.00 percent | Per annum |
| Op'g days/yr - curr. | 308 | Current days of operation |
| Op'g days/yr - fut. | 330 | Assumed days of operation after project start |
| W/out project op'g cost/tonne-km | 6.0191 | Assumed cost per tonne of transported goods without project |
| With project op'g cost/tonne-km | 4.9059 | Assumed cost per tonne of transported goods with project |
| W/out proj. av.dist. | 53.3000 | Average distance without project |
| With project av.dist. | 61.3000 | Average distance with project |
| Wt av tonnes | 8.35 | Average cargo weight in tonnes |

**Table 8.12: Main assumptions for Passenger transport:**

| | | |
|---|---|---|
| Traffic growth factor | 4.00 percent | Per annum |
| Op'g days/yr - curr. | 265 | Current days of operation |
| Op'g days/yr - fut. | 330 | Assumed days of operation after project start |
| W/out project op'g cost/pax-km | 1.2896 | Assumed average cost per kilometer and passenger without project |
| With project op'g cost/pax-km | 1.1190 | Assumed average cost per kilometer and passenger with project |
| W/out proj. av.dist. | 8.0 | Average distance without project |
| With project av.dist. | 18.5 | Average distance with project |
| W/out proj.av.pax. | 22.5 | Average number of passengers per trip without project |
| With proj.av.pax. | 22.5 | Average number of passengers per trip with project |

43. Key assumptions are that the river traffic will increase with the project, passenger and cargo transport will cost less, while the distance travelled will increase. It is furthermore expected that the project will lead to reduced travel time, and reduced VOC, mainly because the dredging and the improved ghats.

ii) Measurement of Economic Costs:

44. A hydrographical survey of the project river stretch was carried out during March 2011, and has concluded that the removal of approximately 193,000 cu. meters of silt and earth will be required to permit year round navigation. The unit dredging cost was estimated at Taka 125 per cubic metre, giving a Capital Dredging cost of Taka 24.125 million.[22] The cost stream is valued in economic terms, i.e. the financial cost estimates are converted to economic cost estimates through the exclusion of taxes and government charges, as well as, of any subsidies embodied in input prices.

45. Given that capital dredging would be carried out by labor intensive methods utilizing indigenous equipment, it is likely that only a value added tax would be applied to project input prices. Thus, it was considered that a shadow pricing factor of 0.8 would be sufficient to allow for the conversion of financial to economic costs. This factor is what is commonly used for this type of investment projects in Bangladesh. After application of a Shadow Pricing Factor of 0.80 to the financial cost, an economic capital dredging cost of Taka 19.37 million was derived. Since relatively little is known about the siltation characteristics of the river, only a rough estimate of the maintenance dredging requirement could be made. This was assessed by the RTIP-II waterway specialists at approximately 25 percent of the capital dredging requirement and cost, incurred once every four years. As would be the case with capital dredging, maintenance dredging would be carried out using labor intensive techniques and indigenous dredging equipment. This would provide income generation opportunities for local communities living along the project sites. Other capital cost ("other capital") including survey works and installations or river signals and marking were also included.

iii) Measurement of economic benefits:

46. The economic benefits of the waterway project may be defined as the difference between the economic operating costs of waterway and road transport for the projected year round movement of cargo and passengers. In the case of cargo traffic, a positive difference between the costs of the two modes (favoring RWT) will divert traffic from road. In the case of passenger traffic while the cost comparison does not favor RWT, the latter can be expected to generate additional traffic as a result of passengers deriving non-quantifiable benefits (e.g. improved transport access to markets) from a year round service. In such cases, passengers are expected to derive benefits which they perceive to be at least equal to the difference between the costs of each mode.[23]

47. For the purposes of establishing unit waterway operating costs, interviews were conducted with four operators of representative types and sizes of vessels operating on the project stretch. These costs were modified to consider through operation of boats during the dry season between Gorai and Kaliakor. In the case of road operating costs, VOC (Vehicle Operating Cost) data obtained from an updating of the Road and Highways Department's HDM-4 (Road Cost Model) data base were used.

[22] Source: Waterway specialist team RTIP II, 21 March, 2011.
[23] This is the so-called "consumer surplus" approach to the valuation of benefits from transport projects.

48. The cost comparison was based on the economic costs associated with the operation of each mode. In other words, the costs exclude taxes and government charges and reflect adjustments necessary for the removal of any subsidies. The only transport cost component which is subsidized is the price of diesel fuel. The current diesel fuel subsidy level was established from a combination of data obtained from the Roads and Highways Department (composition of diesel prices), the Bangladesh Petroleum Corporation (CIF import values for diesel fuel), and the BBC World Service Business website (current price of Brent crude). The adjustment factor for conversion of the diesel financial to economic price through the removal of the subsidy was established as 1.26.

49. For the calculation of the benefit stream, the relative economic operating costs for waterway and road were estimated as shown in the table below.

**Table 8.13: Comparative economic operating costs, waterway and road**

| Segment/Commodity (Vessel/Vehicle Type) | Origin/Destination | Distance (km) | | Economic operating cost (Taka per pax-km or tonne-km) | | |
|---|---|---|---|---|---|---|
| | | RWT | Road | RWT (1) | Road (2) | Difference (2) –(1) |
| Passengers (RWT = 32 pax boat capacity; Road = Tempo, 10 pax. capacity) | Gorai/Kaliakor | 18.5 | 16 | 1.1190 | 0.6205 | -0.4985 |
| Cargo (RWT = 0.33 x 15t, 0.67 x 30t; Road = 6 wheel truck, 7t payload) | Gorai/Dhaka | 58-68 | 44-54 | 4.9059 | 7.0390 | 2.1331 |

*Source: RWT operator interviews; RHD HDM-4 Road Cost Data base (updated to mid 2011)*

50. This comparison shows that for cargo movement RWT enjoys a substantial (30 percent) cost advantage over road transport. This is explained largely by the far higher capital cost and lower payload capacity of trucks, as compared with medium capacity river boats.

51. The comparative RWT costs for cargo transport were estimated on the basis of fairly restrictive assumptions with respect to utilization (e.g. single trip per day, with no back loading) and fuel consumption (the fuel consumption of a boat of 30 tones capacity as reported by operators is 330 liters per thousand km, as compared with 250 liters per thousand km for a six wheel truck).

52. For passenger transport, it was assumed that small steel boats accommodating an average of 22 passengers would be utilized on a year round basis to provide services between Gorai and the Kaliakor GCM. The alternative road transport for passengers would be provided by Tempo vehicles, carrying an average of eight passengers per trip.

53. It may be argued that the improved passenger access to the Kaliakor GCM provided by the project will also improve household incomes. Unfortunately, due to data limitations, it was not possible to quantify these benefits.

54. Passenger transport cost are in relative terms higher for river transport than for road transport, however this does not reflect the origin and destination of potential passengers. River

passenger transport cost is expected to be reduced with project, for river port to river port destinations, and cannot be compared directly with road transport.

55. The benefit stream was estimated as the difference between the "With" and "Without" project economic operating cost streams. In the case of generated passenger traffic, the "rule of a half" will apply to the consumer surplus derived by passengers from their use of waterway transport.

iv) Results of economic appraisal and sensitivity analysis:

56. The EIRR for the RWT component is 15.4 percent with an ENPV of about US$ 70,000. The component remains economically viable if costs increase up to 45 percent or benefits decrease up to 20 percent. The main results are shown in the table below.

**Table 8.14: Sensitivity Analysis of Dredging of Turag River Extension, Kaliakor-Mirzapur.**

Table: EIRR, NPV and sensitivity analysis for Rural Water Transport Improvement Component

| Indicator | EIRR (Base Case) | ENPV (Base Case, US$ million) | Sensitivity Test | | | Switching Value | |
|---|---|---|---|---|---|---|---|
| | | | Cost Increase 20% | Benefit Decrease 20% | Both Cases | Increased Cost (%) | Decreased Benefits (%) |
| EIRR (%) | 15% | $ 0.07 | 15% | 12% | 12% | 45% | 20% |

## Annex 9: Design Summary of the Project Components
## Bangladesh: Second Rural Transport Improvement Project (P123828)

### ROAD DESIGN

1. Information included in this Annex is based on LGED's Consolidated Appraisal Report Document (February/ March 2012), particularly Chapter IV- Technical Aspects, Project Scope and Cost Analysis Document – which was prepared by LGED's Project Preparation Consultants (PPC). This chapter includes information on design details and typical cross sections. The Report should be referred to for details and the information included in this Annex is for summary purposes only.

**Upazila Road (UZR) - Improvement**

2. Raising and Widening of Upazila Road Embankment. In general, horizontal alignment will be followed for the existing road to avoid existing structures and to save costs. However, some realignment may require elimination of sharp bends and/or bridge approaches. Vertical alignments will follow an embankment height of about 0.6m above ten-year flood level. The embankment side slopes will be one (vertical) to 1.5 (horizontal), or one (vertical) to two (horizontal). The following table shows the geometric dimensions of typical Upazila Roads:

**Table 9.1: Geometric Dimension of UZR**

| | |
|---|---|
| Carriageway width | 3.7 m |
| Total shoulder width (each side) | 1.8 m |
| Hard shoulder width (each side) | 0.9 m |
| Carriageway camber | 3% |
| Shoulder camber | 5% |
| Maximum gradient | 3% |
| Road crest width | 7.3 m |

3. A typical road cross section is shown in Chapter IV of LGED's Consolidated Appraisal Report Document. It may often be necessary to modify the above standards to suit local conditions and to reduce costs. For example, in some villages the road shoulder width could be reduced due to the presence of buildings close to the road. In vertical alignment, in some cases, embankment height will be reduced from 0.6m above ten-year flood level to save buildings or to cut costs in consultation with LGED.

**Union Road (UR)**

4. Raising and Widening of Union Road Embankment. The same specifications and approaches used for raising and widening Upazila roads will be applied to Union roads. The following table shows the geometric dimensions of Upazila Roads:

**Table 9.2: Geometric Dimension of UNR**

| | |
|---|---|
| Carriageway width | 3.0 m |
| Total shoulder width (each side) | 1.25 m |
| Carriageway camber | 3% |
| Shoulder camber | 5% |
| Maximum gradient | 3% |
| Road crest width | 5.5 m |

## REHABILITATION AND MAINTENANCE (RPM)

5. The LGED Rural Road Design Manual and Road Maintenance Manual, are generally applicable to rehabilitation and maintenance of UZRs and UNRs under RTIP-II. Maintenance work includes filling pot hole and depressions, restoring hard shoulder and placing overlay ranging in thickness from 100mm to 150mm. It also includes sealing the surface of a thickness of about 7mm and 12mm. The basic principle of this intervention is to restore the geometric standard of the roads as per defined UZR and UNR standards as mentioned earlier. However, the crest width, pavement width or embankment cross section will not be changed. Therefore, there will not be any land acquisition involved.

## PAVEMENT DESIGN

6. The typical asphalting pavement construction, based on a flexible pavement concept, consisted of the following:

**Upazila Road (UZR)**

**Table 9.3: UZR Road Design**

| **Layer** | **Thickness** | **Materials** |
|---|---|---|
| Surfacing | 25 mm and 40 mm | Asphalt (crushed stone/bitumen) |
| Base Course | 150 mm | Crushed brick/sand mixture |
| Sub-base | 150 mm | Crushed brick/sand mixture |
| Improved Sub-grade | 250 mm | Sand |

7. The hard shoulder will be constructed as an extension of base course.

**Union Road (UR)**

**Table 9.4: UR Road Design**

| **Layer** | **Thickness** | **Materials** |
|---|---|---|
| Surfacing | 25 mm | Asphalt (crushed stone/bitumen |
| Base Course | 150 mm | Crushed brick/sand mixture |
| Sub-base | 150 mm | Crushed brick/sand mixture |
| Improved sub-grade | 200 mm | Sand |

8. 25 mm surfacing was selected as it was successfully implemented in RTIP-I, RDP-11 and RDP-7. The use of crushed brick in the pavement layers is common in Bangladesh because of the lack of stone in the country. Crushed stone base course could be used in a few roads in Sylhet region as stone is available in the Sylhet region. Crushed stone is, however, a requirement in

asphalt pavement. 40 mm asphalt surfacing would be used on a few heavily trafficked upazila roads.

**Concrete Surfacing**

9. Besides flexible pavement, the concept of causeway could be introduced in Sunamgonj district and other such low lying areas which are prone to flash floods. The typical concrete pavement for causeway consisted of the following:

**Table 9.5: RCC Causeway**

| Layer | Thickness | Materials |
|---|---|---|
| RCC slab | 200 mm | Crushed stone, sand, cement and steel reinforcement |
| Sub-base | 150 mm | Stone chips |
| Improved sub-grade | 250 mm | Sand |

10. Concrete surfacing based on rigid pavement concept could be used in some Union Roads in Sylhet and other regions. The typical concrete pavement used on Union Roads consisted of the following:

**Table 9.6: RCC Pavement Union Road**

| Layer | Thickness | Materials |
|---|---|---|
| RCC slab | 200 mm | Crushed stone, sand, cement and steel reinforcement. |
| Improved sub-grade | 150 mm | Sand. |

## BRIDGE DESIGN

11. Bridges on UZRs will be designed to AASHTO H-20 to Loading. The following cost effective design measures will be adopted:

- Avoiding high abutments by increasing waterway openings where necessary.
- Designing for efficient use of steel reinforcement
- Using return type, rather than splayed wing walls.
- Designing bridges for double lane traffic (5.50 m).

12. The decks will be designed to have a 0.6 meter clearance above the 50 year high flood level on non-navigable rivers. On navigable rivers the clearance will be varied from 1.0 meters to 1.50 meters according to requirements. High water levels will be determined from hydrological studies. However in practice many of these high flood levels will be determined following discussions with local people and observing watermarks of previous floods on buildings and other structures.

13. Bridge length exceeding 30 meters will be designed for 50 years flood level and bridges length of less than 30 meters will be designed for 20 year flood level.

## GROWTH CENTRE MARKETS (GCM)

14. Markets will be designed following a participatory approach consulting local authorities, venders and users who would submit there own priorities. Chapter IV of LGED's Consolidated Appraisal Report Document contains relevant GCM design details. Design standards for Growth Center Planning are based on this report and may include following components:

> (a) covered mat shed; (b) covered multipurpose sheds; (c) open sales platform; (d) fish shed; (e) slaughter slab; office; (f) toilet with septic tank; (g) tube well; (h) garbage pit; (i) internal roads and drainage; (j) brick paved roads (k) parking areas; (l) ladies corner with separate ladies toilet facilities.

15. The location and layout of the facilities will be determined following a participatory approach. The use of "U" type drains will be avoided (experience on other projects has found that these are usually become filled with garbage and are rarely cleaned out) and the level of brick paving will be designed to ensure that it facilitates drainage.

## GHATS- River Jetty (RJ)

16. The river jetties (ghats) are located on a perennial waterway and are used as a landing place for river transportation. The river jetties directly serve markets and connect to a road network or facilitate inland water transport system which is being taken-up as a pilot initiative under RTIP-II. Country boat owners, operators and others user groups will be consulted in the design preparation. Complete design details may be found in Chapter IV of LGED's Consolidated Appraisal Report Document.

17. Local participation is a requirement in the design of ghats and their integration with the improved UZRs and market network. The improvements include river bank facilities for safe loading and unloading and for mooring. These included protective walls with steps and various types of jetties. Facilities also comprised paved areas with drainage, footpaths, passenger shed, clean water supply, latrines, garbage bins, administration offices and roads to connect to the nearby upazila or main road.

18. The detailed design of all the components including the pilot rural waterways will be prepared and submitted for IDA's approval in advance.

## Annex 10: Performance-Based Maintenance Contracts (PBMC)
## Bangladesh: Second Rural Transport Improvement Project (P123828)

1. The PBMC component foresees the piloting of performance-based maintenance on 450 km of rural roads in 10 districts[24]. The PBMC contracts will include limited initial repair works, maintenance services and emergency maintenance, to be carried out by local contractors, while providing significant employment and income earning opportunities for local women. The approach is expected to reduce maintenance costs, improve road conditions and reduce the management burden for LGED.

2. ***Scope of PBMC component.*** Of the total 26 project districts, ten were selected for application of the PBMC component. The main basis for this selection was the availability of a sufficient length of roads complying with the selection criteria, which could furthermore be combined into appropriate contract packages of approximately 20-50 km (either single roads of sufficient length or sets of roads in close proximity to each other). This also formed the basis for determining the total length of roads to be included under this component, as it was considered that a maximum of 450 km of roads fulfilling the selection criteria could be identified for the first three years of the project in which PBMC contracts would be procured. The selected districts and the estimated road lengths per district and per year are given in the table below. The PBMC contracts will have aduration of five years and consist of limited initial works, maintenance services and emergency maintenance.

**Table 10.1: PBMC pilot road length by district and year**

| | **Year 1** | **Year 2** | **Year 3** |
|---|---|---|---|
| Noakhali | 50 | 30 | |
| Comilla | 20 | 30 | 50 |
| Moulvibazar | 20 | 20 | |
| Cox's Bazar | 30 | | |
| Mymensingh | | 50 | |
| Kishoreganj | | 30 | |
| Sylhet | | | 20 |
| Chittagong | | | 30 |
| Tangail | | | 50 |
| Pabna | | | 20 |
| **Total** | **120** | **160** | **170** |

3. ***Initial works.*** The initial works are to be completed within three to six months and serve to bring the road to the required standard, correcting any existing defects. The scope of the initial works will be limited to spot repairs. Payments for initial works will be based on the unit rates included in the BOQ against the actual amount of work completed.

4. ***Maintenance services.*** The maintenance services will start from the beginning of the contract and continue for the full five year duration. Payment will be performance-based with

[24] Noakhali, Comilla, Moulvibazar, Cox's Bazar, Mymensingh, Kishoreganj, Sylhet, Chittagong, Tangail, and Pabna.

fixed monthly payments against compliance with minimum conditions as defined by performance indicators. Non-compliance will result in deductions being made to the monthly payments. Continued non-compliance will result in penalties (doubling of the deductions) and may ultimately lead to termination of the contract. Deductions will also be applied in case of defects covered under the initial works, thus avoiding duplicate payments and providing an incentive to finish the initial works as soon as possible. However, penalties will not be applied to these defects during the period that was agreed for the completion of the initial works. Response times for the correction of defects will not be applied except for road usability[25], and compliance will only be inspected during the monthly formal inspections.

5. ***Emergency maintenance.*** Emergency maintenance is included in the PBMC contract as a provisional sum which may be used at any time during the contract period when an emergency situation presents itself with damages exceeding predefined volumes, but only if approved by LGED. Payment is based on unit rates as provided in the BOQ for these works, against the volume of work completed. The total cost of emergency works carried out under the contract may not exceed the provisional sum provided in the contract (any emergency maintenance works exceeding this provisional sum will be carried out under a separate contract).

6. ***Road selection***. Criteria for the selection of roads for the PBMC component have been agreed between World Bank and LGED in order to ensure that selected roads would not require excessive initial works or maintenance services in order to comply with the proposed minimum conditions. Candidate roads must comply with the eligibility criteria listed below.

- Upazila roads
- Bituminous surface (small sections of CC/RCC or brick paving acceptable)
- No physical gaps
- Carriageway width in compliance with geometric standards
- Traffic levels below 5,000 AADT
- Complete road sections (with clear start and end point)
- Pavement strength sufficient to allow for five year routine maintenance contract (IRI7.5[26] and measurement of pavement strength[27])

7. For the first year roads, an additional criterion was that the 2 DANIDA pilot roads in Noakhali district would be included. The selection from candidate roads complying with these eligibility criteria will give preference to RTIP-I roads. The remaining roads will be ranked on the basis of vehicle-kilometer (AADT multiplied by the road length) as a proxy for the importance of a road. A final requirement is that the resulting road selection result in a suitable

[25] The road may not be blocked for more than six hours.

[26] Lower IRIs were initially envisaged, but did not result in sufficient roads being identified (applying an IRI of six, only 28km of candidate roads were identified in the four first year districts). This is due to the fact that pavement works tend to result in relatively high IRIs, with even the RTIP-I roads currently having IRI's of around six or seven. Field visits further verified that the roads with IRIs of 6-7.5 were in relatively good condition, but had many potholes due to a lack of maintenance, which could easily be rectified under a PBMC approach. As a result, it was decided to include roads with IRIs up to 7.5.

[27] The strength of the pavement was tested by measuring the deflection using a Benkelman Beam, comparing it to existing traffic loads which were assessed using portable weigh bridges. This was done to ensure that the existing pavement could cope with the current and foreseen traffic loads without resulting in serious damage, the repair of which would be beyond the scope of the foreseen PBMC contracts.

contract package of approximately 20-50 km (either a single road of sufficient length or a set of roads in close proximity to each other). Initially smaller contract sizes will be applied to allow LGED and contractors to gain experience with the PBMC approach and in later years the contract size may be increased depending on the results of earlier years.

8. These selection criteria have been applied for the first year roads using LGED's road inventory and condition data. A total of 428 km of candidate roads were identified in the 4 first year districts (including one DANIDA pilot road with an IRI of 7.8). From this list of candidate roads, those roads were subsequently selected that would result in suitable contract packages. In Moulvibazar, Cox's Bazar and Comilla single candidate roads of sufficient length were selected (four in total, averaging 28 km - in Moulvibazar and Comilla these were RTIP-I roads[28]). In Noakhali a different approach was applied due to the inclusion of the two DANIDA pilot roads, creating a network of smaller roads connecting the District HQ and an Upazila HQ.

9. Based on these criteria, ten candidate roads with a total length of 167 km have been selected for the first year (see table below). The geometric and condition data of all the candidate roads have been compared to the selection criteria and five of the ten candidate roads were visited in the October 2011 and February 2012 missions. LGED will carry out further screening of the candidate roads including pavement strength measurements as well as traffic surveys and axle load calculations. Any roads found to present insufficient pavement strength for the foreseen five year contract period will be excluded from the final selection. The initial list of roads was therefore approved pending confirmation after the detailed survey. For the second and third years the same selection criteria and screening process will be applied. A review of the application of the selection criteria and screening process in the first year will be carried out after the contracts have been awarded, based upon which the selection criteria and screening process may be amended (taking into account the number of bidders and the bid prices received).

**Table 10.2: Selected PBMC roads for the first year**

| District | Upazila | Road code | Road name | Length |
|---|---|---|---|---|
| Noakhali | Noakhali-S | 475872001 | Sonapur-Thanar hat-Akther Miar Hat Road. | 16.30 |
| Noakhali | Noakhali-S | 475872010 | Banglabazar-Al-amin bazar-Halim bazar-Subarnachar Upazi;a Hq Road. | 5.30 |
| Noakhali | Subarna Char | 475892006 | Upazilla H.Q-Halim Bazar-Al -Amin Bazar-Banglabazar Road. | 8.25 |
| Noakhali | Subarna Char | 475892002 | Sonapur-Thanar hat-Akther Miar Hat Road. | 15.95 |
| Noakhali | Subarna Char | 475893006 | Chor Amanullah UP Office-Khaserhat-Banglabazar-Karimbazar Road. | 8.41 |
| Noakhali | Subarna Char | 475892001 | RHD-Khaserhat-Chomir hat Road. | 1.90 |
| Comilla | Chouddagram | 419312002 | Rajabazar-Alkara (Shah Fakruddin Road) | 34.50 |
| Moulvibazar | Kulaura | 658652001 | Brahman Bazar-Fenchugonj | 15.00 |
| Cox's Bazar | Ukhiya | 422942001 | Coat bazar-Shaplapur GC Road Via-Sonarpara Monkhali Road. | 31.27 |
| Cox's Bazar | Teknaf | 422902002 | Teknaf Bus Station-Shamlapur Road. | 30.09 |
| | | | **Total** | **166.97** |

[28] Noakhali and Cox's Bazar were not included in RTIP-I.

10. ***Performance indicators and inspections***. The minimum condition of the road to be achieved by the contractors under the PBMC component is defined by performance indicators. The performance indicators to be used in the PBMC component have been agreed upon and are included in the model bidding document. A table listing the performance indicators, the measuring methods and the deductions to be applied in case of non-compliance is provided at the end of this Annex. The condition of the road will be compared with these performance indicators during a monthly formal inspection, which will be carried out by LGED staff (district or upazila engineers) who will receive training under this project. In case of non-compliance, deductions will be applied immediately to the payment for that month, without giving any additional time to contractors to correct identified defects. This has been done to ensure that contractors take responsibility for planning and organizing their inputs to ensure compliance with the performance indicators, rather than only correcting defects identified during inspections. It also serves to reduce the number of inspections that need to be carried out with the aim to reducing the management burden for LGED. During the training of the contractors, special attention will be given to this aspect, to ensure that they realize their responsibilities and the consequences of not properly monitoring the performance standard of the road and correcting any identified defects.

11. ***Price adjustments.*** Price adjustments will only be applied to the payments for emergency maintenance that take place after the first 18 months, using the index for construction works valid at the time of executing these works. The initial works will be completed in the first 6 months and will not require cost adjustments. For the maintenance services, price adjustments are not feasible as this will require constant monthly updating of payments and will complicate budgeting. Instead, the contractor will be required to include price adjustments in his bid price, resulting in a fixed lump sum to be paid in equal monthly payments (provided that no deductions are applied).

12. ***Securities and retention.*** Under the PBMC component there are risks of the contractor defaulting especially at the beginning of the contract (defaulting on the initial works and still receiving partial payment of maintenance services for the road sections in good condition) and at the end of the contract (defaulting on the maintenance services due to increasing maintenance costs). Therefore a combination is applied of two performance securities combined with payment retentions to provide sufficient guarantee to the employer while at the same time minimizing the costs for the contractor. A basic performance security of five percent of the total contract sum will be applied for the whole duration of the contract to be returned if the road complies with the performance indicators at the end of the contract. An additional performance security of ten percent of the sum for initial works will be applied until satisfactory completion of these initial works to ensure they are carried out as planned. A retention of five percent will be applied to all payments (initial works, maintenance services and emergency maintenance) and paid out only after completion of the full contract to avoid contractor default in the latter half of the contract. There is also an additional standard provision in the bidding documents that in the case of contractor default, ten percent of the value of the remaining works will be deducted from any payments due. Before preparation of the bidding documents for the second and third year, the functioning of this combination of securities and retentions in previous contracts will be evaluated and amended if necessary.

13. ***Labor Contracting Societies (LCS)***. The LCS consists of local poor and destitute women who are subcontracted by the contractors to carry out the off-carriageway labor-based maintenance work (this currently happens through direct contracting by LGED). The contractor will be required to hire an average of one woman per kilometer of road for 360 days a year, resulting in over 800,000 workdays of employment and nearly BDT 100 million (US$1.3 million) in income earnings[29] being created for women under this component. To ensure subcontracting of these LCS, they are mentioned as nominated subcontractors in the bidding document. LCS women will furthermore receive training on pavement repairs, making it possible for them to also be hired by the contractors to do part of the pavement maintenance (with necessary material and equipment provided by the contractor), and expanding the income earning opportunities of these women.

14. ***Component costs***. The unit cost for this component is based on the average costs obtained in the DANIDA pilots. Initial repair works are estimated to cost an average of BDT 800,000 per km, while maintenance services are estimated to cost BDT 25,000 per km per month (25 percent increase over DANIDA's costs due to the extended contract duration, resulting in higher maintenance costs later on in the contract). The costs of maintenance services are relatively high compared to international PBMC experiences, but were found to be very competitive compared to the traditional BOQ approach as applied by LGED. The high costs are considered to be due to the high material costs in Bangladesh. During the monthly inspections, records will be kept of the volumes of work carried out by the contractor in order to be able to determine the costs made by the contractor and identify the main causes of these elevated maintenance costs (e.g. material costs, pavement quality, contractor efficiency) so that these may be addressed through the project.

15. Total average costs per kilometer for initial works and maintenance services for five years come to BDT 2.3 million. An additional ten percent is reserved as a provisional sum for emergency maintenance, bringing the total cost per kilometer for five years to BDT 2.5 million or US$0.031 million. The total cost of this component for 450 km would then come to US$13.92 million. During the first five years of the project, the World Bank will finance 60 percent and GoB 40 percent, and after the first five years GoB will finance 100 percent. A Management Letter from the Chief Engineer of LGED has been received to confirm the commitment of GoB to finance the PBMC contracts in the last two years of the project.

16. ***Contract packaging.*** The impact of increasing the contract duration to five years (compared to two years under the DANIDA pilots) is significant due to the increased maintenance needs in the latter years. Therefore the size of the contracts will be limited to a maximum of 35 km. Only in the third year will a larger package of approximately 50 km be tested in Comilla under condition that the assessment of the contract execution of the first and second year packages is found to be positive. Based on a review of the number of bidders and the resulting bid prices, it may be necessary to adjust the size of the contract packages. For the first year, a total of six contract packages are planned, one per Upazila (this may be reduced after screening of the candidate roads). Contract sizes in the first year vary from 15-35 km, and estimated contract sums vary from BDT 37.5 million to BDT 87.5 million (US$0.5 million to

[29] Based on the 2011 rate of BDT 120 per day.

US$1.1 million), with a total estimated procurement cost of BDT 417 million (US$5.4 million) for the first year. The number and size of contract packages in subsequent years is expected to be similar, with a maximum contract size of 50 km or BDT 125 million (US$1.6 million). The total number of contract packages is expected to be 36 (six each year).

17. ***Training of LGED staff***. LGED staff in the districts and upazilas involved in the PBMC component will receive training on PBMC, including a general overview, the preparation of cost estimates and the carrying out of inspections. This training will also include the carrying out of the screening of candidate roads, including a detailed survey of defects as well as pavement strength testing and traffic surveys to evaluate if the pavement strength is sufficient. For the first year contracts this training will be carried out with the support of the DANIDA PBMC advisor to LGED. For subsequent years this training will be carried out as part of the 'mainstream' Training program in LGED, supported by the institutional strengthening component of the project. A guide for LGED staff and will be developed under the project that will include these aspects.

18. ***Bidding document***. The model bidding document for PBMC has been prepared by LGED based on the GoB model bidding document for works up to BDT 500 million. Amendments recommended by the World Bank have been discussed and incorporated. The resulting model bidding document takes into account the issues of securities, retention, price adjustments, performance indicators, payments, and LCS discussed above, and will form the basis for all the PBMC contracts.

19. ***Bidding document***. A model bidding document to be used for all the PBMC contracts has been prepared by LGED based on the Bangladesh model bidding document for works up to BDT 500 million. This model bidding document has been reviewed by the World Bank and necessary amendments have been incorporated after discussions with LGED. This model bidding document clearly reflects the agreements regarding performance securities, payment retention, price adjustments, performance indicators and standards and their related testing methods, payment system, and LCS subcontracting that are discussed above.

20. ***Bidding process***. LGED will prepare the BOQs and the bidding documents for each contract package based on the model bidding document and the detailed survey of the project roads. Financial evaluation of the PBMC bids will look at the sum of the quoted prices for the three components: initial works, maintenance services and emergency maintenance.

21. ***Training of contractors***. After each bidding process is initiated, training of the contractors will be carried out in the concerned upazilas. This training will include a general overview of PBMC and planning of maintenance works, as well as specific training on the preparation of bids for PBMC contracts. For the first year contracts this training will be carried out with the support of the DANIDA PBMC advisor to LGED. For subsequent years this training will be carried out as part of the 'mainstream' training program in LGED, supported by the institutional strengthening component of the project. A manual on PBMC maintenance will also be prepared for the contractors.

**Table 10.3: Performance standards, measurement methods and deduction percentages**

| Item | Performance Standard | Measurement/Detection | Deduction percentage |
|---|---|---|---|
| **1. Carriageway and shoulders** | | | |
| **Cleanliness** | • The road surface is clean and free of soil, debris, trash and other objects | • Visual inspection | 10% |
| **Depressions** | • There shall be no depressions with a height difference of more than 30 mm | • Visual inspection | 50% |
| **Potholes** | • There are no potholes with a diameter greater than 150 mm or deeper than 3 cm<br>• There are no more than five (5) potholes in any continuous 1,000m section | • Visual inspection<br>• Ruler (to check pothole size) | 50% |
| **Patches** | • Patches are square or rectangular, are level with surrounding pavement, are made using materials similar to those used for the surrounding pavement, and do not have cracks wider than three (3) mm | • Visual inspection (for detection of shape and material used<br>• Ruler (to check if patch is level with surrounding pavement<br>• Small transparent ruler (for crack width) | 50% |
| **Cracks** | • Mesh or block cracks with a width >6 mm do not cover more than $5m^2$ of any 100 meter road section<br>• The total length of longitudinal cracks with a height difference greater than 10 mm, a width greater than 6 mm or having branches, is not more than 5 meters in any 100 meter road section | • Visual inspection<br>• Small transparent ruler (for crack width and height difference) | 50% |

| Item | Performance Standard | Measurement/Detection | Deduction percentage |
|---|---|---|---|
| **Rutting** | • There are no ruts deeper than thirty (30) mm<br>• Ruts are present in less than 25 percent of the road length under contract. | • 2 rulers (horizontal ruler of 3m length placed perpendicularly across lane; rut depth measured as space between horizontal ruler and lowest point of rut, using a small ruler with scale in mm) | 50% |
| **Raveling** | • The area affected by raveling does not exceed 20% of any 100 meter section | • Visual inspection | 50% |
| **Edge damage** | • There are no loose pavement edges, or pieces of pavement breaking off at the edges | • Visual inspection | 50% |
| **Pavement width** | • The pavement width must be at least 3.5 meters wide | • Measuring tape (measuring the distances between the parts of the road edge closest together in any 50m section) | 50% |
| **Shoulders** | • The shoulder is not continuously more than 30mm lower than the pavement in any 10m section<br>• The shoulder is not continuously higher than the pavement in any 50m section<br>• Shoulders are not obstructed by material<br>• Road shoulders are outward sloping | • Visual inspection<br>• Ruler | 50% |
| **2. Drainage structures** | | | |
| **Ditches and drains** | • No more than 10% of the cross section is obstructed at any spot in a drain or ditch<br>▪ Lined ditches do not have structural damage and are firmly contained by surrounding soil or material | • Visual Inspection | 30% |

| Item | Performance Standard | Measurement/Detection | Deduction percentage |
|---|---|---|---|
| **Culverts and similar** | • No more than 10% of the cross section is obstructed at any spot in the culvert<br>• There is no structural damage and culverts are firmly contained by surrounding soil or material | • Visual Inspection | 30% |
| **3. Other structures** | | | |
| **Bridges** | • Guardrails are present and not deformed.<br>• All metal parts of the overall structure are painted or otherwise protected and free of corrosion<br>• The bridge deck is clean and the deck material is fully intact and bolted down<br>• The drainage system is in good condition and fully functional<br>• Expansion joints are clean and in good condition<br>• There are no obstacles to the free flow of water under the bridge and up to 100 meters upstream<br>• The clearance under the bridge is according to design<br>• There is no erosion around bridge abutments and piers | • Visual inspection | 50% |
| **Retaining walls** | • Retaining walls are stable and without damage | • Visual inspection | 50% |
| **Concrete Barriers** | • There are no cracks wider than 1.5 mm<br>• There is no scaling or popouts<br>• There is no unsound concrete<br>• There is no widespread deterioration of the surface | • Visual inspection | 50% |
| **4. Slopes and Embankments** | | | |
| **Slopes and embankments** | • The embankment does not have deformations or erosion<br>• Cut slopes are stable and/or adequate retaining walls and slope stabilization measures are in place | • Visual inspection | 20% |
| **5. Vegetation** | | | |

| Item | Performance Standard | Measurement/Detection | Deduction percentage |
|---|---|---|---|
| **Vegetation height** | • There is no vegetation in case of<br>▪ Culvert headwalls<br>▪ Culvert pipes<br>▪ Weigh pits<br>▪ Lined channels<br>▪ Sealed surfaces<br>▪ Bridge decks<br>• Vegetation height is less than 75 mm in case of<br>▪ Shoulders<br>▪ Medians<br>▪ Traffic islands and verges<br>▪ Rest areas (including around rest area furniture)<br>▪ Side drains<br>▪ Surface water channels with gradient < 3%<br>▪ Culvert ends<br>▪ Mileposts<br>▪ Signposts<br>▪ Bridge end and culvert markers<br>▪ Guardrails<br>▪ Sight rails<br>▪ Lighting Columns<br>▪ Bridge abutments<br>• Vegetation height is less than 300 mm in case of<br>▪ Large vegetated areas<br>• Surface water channels with longitudinal gradient ≥ 3% | • Ruler | 25% |
| **Vegetation clearance** | • The vertical clearance between the road surface and the lowest point of tree or other plant is more than 2.5 metres | • Measuring tape | 25% |
| **6. Traffic signs and safety measures** | | | |

| Item | Performance Standard | Measurement/Detection | Deduction percentage |
|---|---|---|---|
| **Signs** | • Information signs are present, complete, clean, legible, and structurally sound<br>• Warning signs are present, complete, clean, legible, structurally sound and clearly visible at night<br>• Traffic signs are present, complete, clean, legible, structurally sound and clearly visible at night | • Visual inspection | 20% |
| **Horizontal demarcation** | • Horizontal demarcation is present, legible and firmly attached to pavement<br>• Micro spheres are firm and visible | • Visual inspection | 20% |
| **Guardrails** | • Guardrails are present, clean, and without any significant damage<br>• Corrosion does not exceed more than 75% of the surface area<br>• The thickness of the guardrails is more than 2.4 mm<br>• The thickness of the pole is more than 3.5 mm | • Visual inspection | 20% |
| **Milestones** | • Milestones and guidance posts are present, complete, clean, legible and structurally sound<br>• Milestones and guidance posts are surface painted or otherwise covered | • Visual inspection | 10% |

**Annex 11: Rural Transport Improvement Project – I: Lessons Learned**
**Bangladesh: Second Rural Transport Improvement Project (P123828)**

1. Rural Transport Improvement Project (RTIP-I) was approved on June 30, 2001 with a Credit Amount of SDR 138 million (US$190 million) and with a closing date of June 30, 2009. Subsequently, an additional financing of US$20 million was added to the project on December 31, 2007 to facilitate rehabilitation of the 2007 flood damaged rural roads network within the project area. The revised closing date of the project was June 30, 2012. All project components including flood rehabilitation were completed by this date.

2. The project covered 21 districts of the country. The project comprised of (a) improvement of 1,100 km of Upazila roads, (b) improvement of 500 km of Union roads, (c) periodic maintenance of 1,500 km of Upazila roads, (d) construction of 15,000 linear meter of drainage bridge/culvert on union roads, (e) improvement/construction of 150 rural markets and 45 rural jetties, (d) technical assistance for project implementation (Design and Supervision Consultant, training, institutional strengthening).

3. During implementation, improvement of UZ roads took longer to complete than expected due to delays in land acquisition and poor contract management. The maintenance component, however, progressed satisfactorily since it did not involve any land acquisition. There was a severe price increase of construction materials (specially cement and reinforcement steel) in international markets during the period of 2007 to 2008 which resulted a major setback in the construction of UZ roads (many contractors abandoned the site because of the high price of materials since price escalation was not included as part of their contract) about 70 contracts had to be cancelled and rewarded. Subsequently, the re-awarded contracts were completed satisfactorily. Although delayed, LGED's prompt contractual decisions helped in the completion of about 70 contracts. Based on the experience of RTIP-I, in addition to the two Design and Supervision consulting (D&SC) firms, one Management Support Consulting (MSC) firm will be appointed under RTIP-II who will coordinate the activities of the two D&SCs and provide support to LGED in making timely decision.

4. RTIP-I introduced four ICB contract packages on a pilot basis which were awarded in 2008 and each packages composed of four to five roads. However, severe delays occurred during implementation due to the large geographic spread of the roads. Two contracts were completed with a one year extension beyond the original contract period of thirty months. The other two contracts were cancelled and re-awarded as NCBs. Based on this experience no ICB civil work contracts have been proposed in RTIP-II.

5. The main focus of the Institutional Strengthening Action Program (ISAP) of LGED was related to (a) Strategic Development, (b) Organizational Development, (c) Financial Management and Audit, (d) Quality Assurance and Technical Auditing, (e) Maintenance and Asset Management(f) Rural Transport Safety, and (g) Environmental and Social Mitigation Management. While implementation of ISAP was progressing satisfactorily, the World Bank and LGED initiated a Operational Risk Assessment (ORA) study in 2008 with the following objectives (i) to assess fiduciary and operational risks in LGED's management of projects, assets and other resources, and Local Government Division (LGD) of the Ministry of Local

Government, Rural Development and Cooperation (MLGRD&C)'s oversight function, (ii) to evaluate the efficacy of external review of decision-making by LGED and the LGD, (iii) to identify options for future monitoring of operational risks in LGED and the LGD, and (iv) to prioritize options which are realistic and to effectively minimize the major operational risks identified. Based on the experience of RTIP-I, ORA and GoB's current emphasis on Information and Communication Technology (ICT) the Institutional Development and Governance sub component has been redesigned to include a comprehensive IT-ICT supported Integrated Decision Support System (IDSS).

6. In RTIP-I LGED implemented a pilot Rural Transport Safety Component (RTSC) covering three roads. The main objective of this initiative was to improve the safety of rural communities through a combined effort between LGED and the local community. The RTSC had three main forms of activities; (a) initial Transport Safety Assessment (TSA), (b) Awareness, Advocacy and Awareness Campaign (AAEC); and (c) Capacity Building. This involved awareness building and IEC (Information Education and Communication) activities through seminars and workshops for road users, local community, and government officials in charge of transport regulations and enforcement as well private groups or individuals involved in safety concerns. As part of bottom-up approach, Community Road Safety Groups (CRSG) were formed with representation from local government, school teachers, religious institutions, transport users, cultural worker, local media. The capacity building component included training for both LGED staff as well as for the Union Parishad representatives. LGED developed a 50-day road safety training program for LGED engineers and local staff and LGIs within the three pilot districts. LGED also provided half-day trainings on road safety as part of a basic training to 20,000 Local Government representatives (LGIs). In addition LGED also carried out course evaluation (pre- and post-tests) of the participating drivers in the training program. Based on the success of RTIP-I, a comprehensive scaling up of road safety activities has been proposed in all 26 districts of RTIP-II.

7. At present, approximately 25 percent of workers employed in earth work, brick crushing, social forestry on the road side, and as traders in the rural markets (developed under the RTIP-I are women. In RTIP-I, women were involved in off pavement maintenance work only (related to earthwork), however, based on the experience of the DANIDA supported maintenance project implementated by LGD, efforts will be made to encourage maintenance contractor to engage women worker in the maintenance of pavement work in RTIP-II.

8. During the initial project implementation period, the post review on procurement revealed some deficiencies and lapses on behalf of LGED. As a mitigation measure, after the Mid-Term Review LGED started submitting quarterly Procurement Risk Mitigation Report (PRMR) on an agreed format. Additionally, all RTIP-I engineers received procurement training by LGED or the Government's Central Procurement Training Unit (CPTU), which helped mitigate procurement risk. For RTIP-II, it is recommended that PIU staff as well as field engineers have adequate procurement experience before joining the project team.

9. Financial Management for the project was weak due to (i) delays in settlement of audit issues between LGED and Foreign Aided Project Audit Division (FAPAD) and (ii) occasional inconsistencies on accounting data. To increase the capacity of LGED's accounting system, an

accounting firm with IT experience has been appointed to assess and customize the Unified Financial Management System (UFMS) capability and accounting hierarchy in the system to produce accurate and effective Financial Management Report (FMR). Adequate emphasis has been given in the design of RTIP-II to address the Financial Management issue.

10. The Environmental category for this project was category A. Natural Habitats OP was not triggered under RTIP-I. An overall EMF was prepared for this project and Environmental Management Plan (EMPs) were prepared for category one civil works (UZ road improvement) whereas sample EMPs were prepared for other minor works. Separate Environment Assessments (EAs) were conducted for specific projects like bridges of certain length (requiring hydrological surveys and high bridge approach). The implementation review mission of the Bank regularly reviewed the environmental compliance of the project. Under this project Environmental Code of Practice (ECP) and Environmental Management Framework (EMF) for LGED have been updated.

11. Although 1500 km of UZ roads were maintained under this project, this falls far short of the country wide requirement. While GoB is increasing the maintenance budget, LGED is receiving only about 25 percent of its actual requirement of Taka 2.7 billion (US$350 million). Under this backdrop more emphasis has been placed on the maintenance for RTIP-II. Compared to RTIP-I (where 16 percent of project fund was allocated for maintenance) more allocation has been proposed for RTIP-II (42 percent of project fund). About 3,550 km maintenance has been proposed in RTIP-II and in addition about 450 km of maintenance will be carried out through Performance Based Maintenance Contract). LGED has already prepared and submitted a maintenance policy to the Ministerial Cabinet for approval. LGED is also currently preparing a maintenance strategy which will help engage and encourage policy makers to provide more funds for maintenance.

12. Under RTIP-I there were provision of technical audit and financial audit. Given a larger project size and wider coverage area (26 districts compared to 21 districts) provision have been kept for a comprehensive Integrated Performance Audit Consultant (IPAC) for better monitoring of the project. The IPAC consultant will review planning and design issues, implementation issues, institutional issues and provide semi-annual reports which will allow LGED to take corrective measures during project implementation. Procurement related Lessons learnt are as follows:

13. **Lessons Learned from Procurement under RTIP-I**:

- ***ICB Contract Packages***. LGED used ICB contracts for the first time in its implementation history of Bank-financed projects and the result were not encouriging. Prequalification process failed once, initial bidding process was inappropriate and the rebidding process took almost 15 months. The contracts which were not implemented properly, became non-performing contracts and had to be re-bid by dividing into further packages and using NCBs. This essentially indicates that LGED is still not ready for ICB contracts in civil works.
- ***Procurement Risk Mitigation Framework (PRMF)***: In October 2006, the Bank introduced this matrix of actions aimed at reducing procurement-related risks in RTIP-I. It was further developed by Government of Bangladesh under Public Procurement

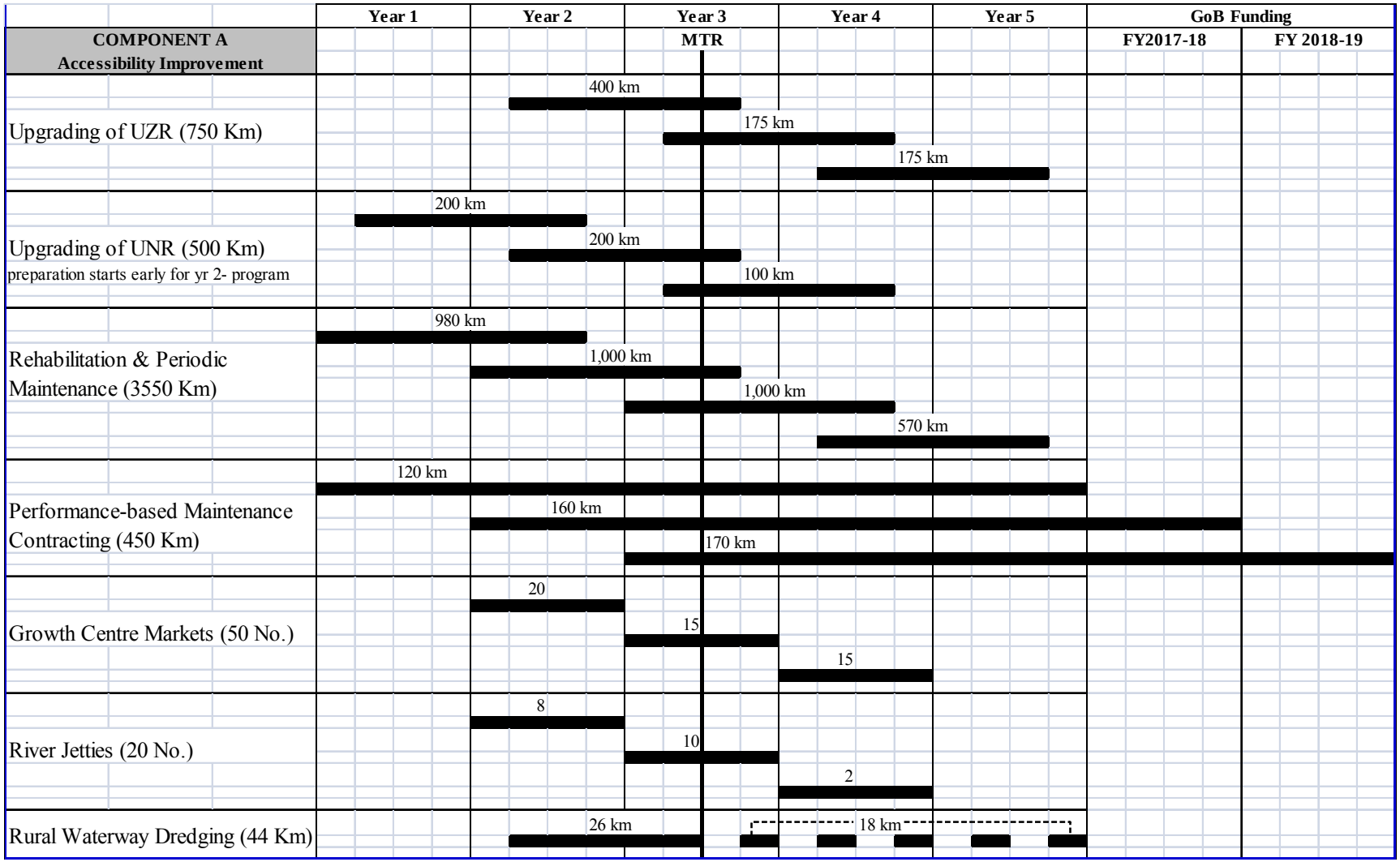
Reform Project (PPRP-II) and developed as a set of procurement performance-related indicators named PROMIS (Procurement Management Information System). This has elements regarding procurement performance on advertising, bidding, timeliness in evaluation and award, complaint resolution, F&C prevalence etc.

- ***Timely Bidding Process and Contract Award.*** On many occasions LGED awarded civil works contracts at the beginning of rainy season or late in the dry season, resulting in non-activity of contractors for half of the year and delays in contract implementation. All contracts which were awarded in this pattern took one year extra for completion. This did not impact maintenance contracts but only improvement works. On the other hand contracts awarded during rainy season had two full dry seasons to be completed.
- ***Technical Assistance needs in improving procurement culture.*** LGED has been going through traditional procurement and civil works execution since its inception though the size of contracts has been getting larger with every project, (both in size and estimated cost). However, due to its decentralized nature and contractors' capacity constraints, LGED is generally compelled to make contract sizes small and this results in monitoring many contracts per project each year.
- ***Sub Delegation of Financial Powers:*** While the district and sub-district offices of LGED have been exercising their assigned financial sub-delegation, LGED frequently sent procurement cases to its headquarters when (i) lowest evaluated bid price is more than ten percent above estimated cost, (ii) re-tendering and (iii) complaint. The above practices caused delays in procurement.
- ***Complaints and Resolution:*** During the first three years of RTIP-I, there used to be frequent complaints by bidders. After implementing PRMF, where LGED agreed to have complaint boxes in every district offices, the occurrence of complaints diminished and Bank's post-review also did not reveal any issue related to contractors'/bidders' representations.
- ***Timely selection of design/supervision consultants:*** For the period between 2003 and 2008, long-term design-supervision consultants provided services to LGED. New contracts for 2008-10 were awarded in August 2008 followed by single source selection (SSS) of supervision consultants for 2010-11. Except the first two selections which had been competitive, each time LGED approached the need for extension or SSS at a late hour, resulting in the need for retroactive financing for services rendered.
- ***Impact of Procurement Reform:*** LGED is one of the target agencies of the Government's PPRP-II. As part of it, huge capacity building of LGED has taken place in last nine years, and currently 377 out of 624 procuring entities (about 60 percent) of LGED have at least one person with national three-week training on procurement. LGED is also a front-runner in procurement monitoring (through PROMIS) and electronic government procurement (e-GP).
- ***Cancellation of Contracts and Debarment of Firms:*** LGED during various stages of RTIP-I has debarred about 20 firms. Due to non-performance, about 40 contracts were cancelled and either re-tendered or repackaged. As regards cancellation of contracts, the Bank's experience is that it is difficult for LGED to cancel contracts on its own and during implementation support missions, LGED needed the Bank's assertion to implement such actions.

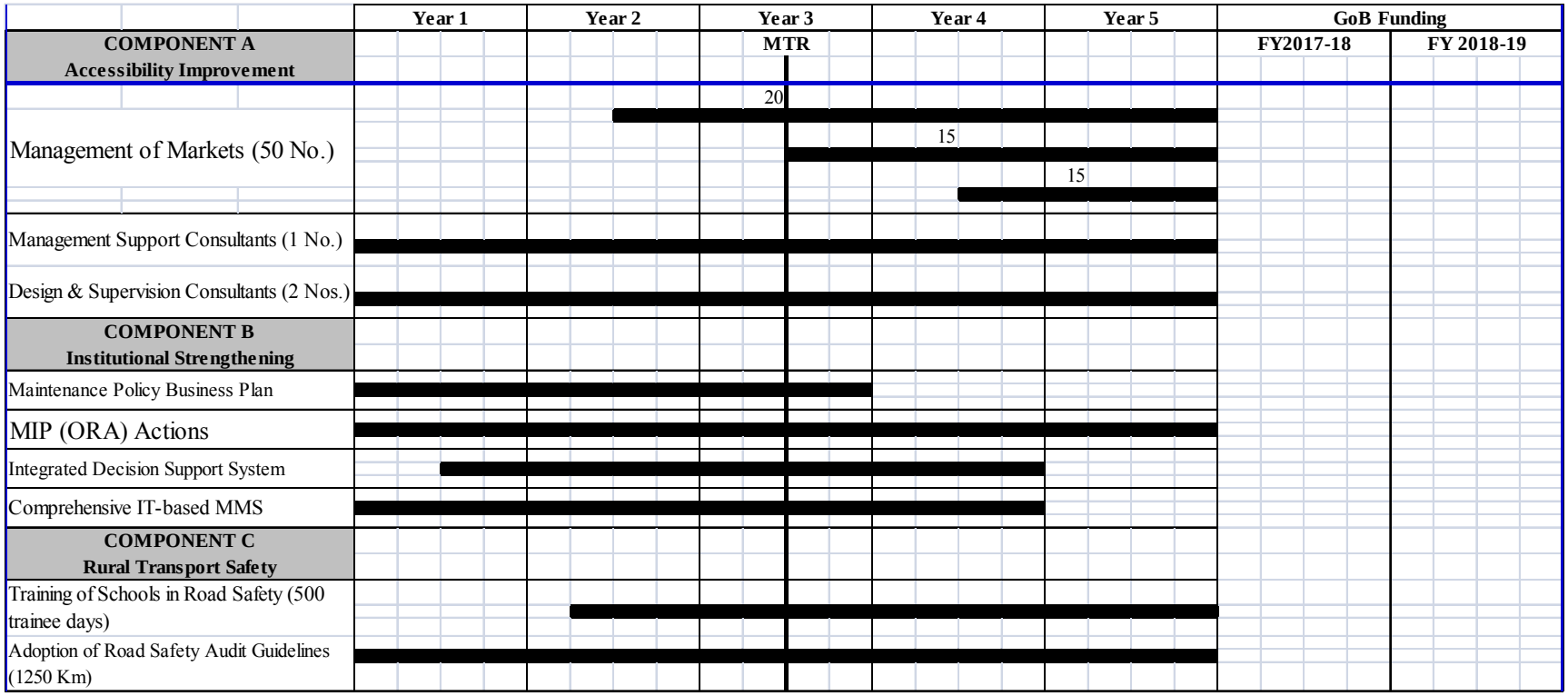
## Annex 12: Rural Water Transport Improvement Sub-Component Risk Mitigation Matrix
## Bangladesh: Second Rural Transport Improvement Project (P123828)

| Issues | Risk | Mitigation | Response from LGED |
|---|---|---|---|
| Institutional | LGED's lack of authority for the implementation of this component. | LGED to provide a policy letter to the Bank confirming their responsibility for this component (prior to negotiation). | Chief Engineer issued to World Bank. |
| | Lack of coordination among related agencies. | Form a coordination committee among BIWTA, BWDB, MOS and LGED to avoid over lapping of activities for the selected river routes (prior to the Board approval). | Chief Engineer would issue a circular forming a committee at district level for coordination. |
| | Lack of capacity at LGED. | Appoint IWT consultant (before effectiveness). | Agreed. |
| Technical | Insufficient Technical information. | Carry out hydrographic survey.<br><br>Carry out sediment transport study.<br><br>Select the type of dredger depending on dredging quantity.<br><br>Select the dredging spoil location. | - Done in 1st canal.<br>- Would be done in 2nd canal. |
| Social | Lack of detail information. | Select landing stations in consultation with stakeholders (providing gender equity).<br><br>Carry out SIA and prepare SMP for each river route.<br><br>Confirm that if any land is needed it will be procured in time as required by the SIMF. | - Done in 1st canal.<br>- Would be done in 2nd canal.<br>- Collect additional Data required.<br><br>Agreed |
| Environmental | Lack of detail information. | Carry out EIA for the selected river routes and prepare EMP.<br><br>Carry out quality of dredged material. | - Done in 1st one.<br>- Would be done in 2nd one. |
| Monitoring | Lack of monitoring may affect the pilot component. | Ensure effective monitoring through regular supervision. | Agreed. |

## Annex 13: Project Implementation Schedule
## Bangladesh: Second Rural Transport Improvement Project (P123828)



## Project Implementation Schedule (cont'd)



**Map IBRD39160**