

A.I.D. EVALUATION SUMMARY PART I

(BEFORE FILLING CUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

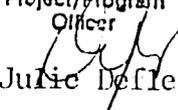
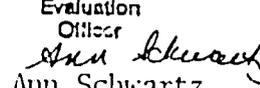
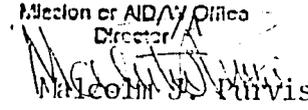
IDENTIFICATION DATA

A. REPORTING A.I.D. UNIT: <u>USAID/DIAKA</u> (Mission or AID/W Office) (ES# _____)	B. WAS EVALUATION SCHEDULED IN CURRENT FY ANNUAL EVALUATION PLAN? yes <input type="checkbox"/> slipped <input type="checkbox"/> ad hoc <input type="checkbox"/> Eval. Plan Submission Date: FY ___ Q ___	C. EVALUATION TIMING Interim <input type="checkbox"/> final <input checked="" type="checkbox"/> ex post <input type="checkbox"/> other <input type="checkbox"/>								
D. ACTIVITY OR ACTIVITIES EVALUATED (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report)										
Project # <u>588-0056</u>	Project/Program Title (or title & date of evaluation report) <u>Feeder Roads Maintenance and Improvement Project</u> <u>Nov. 1989</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">First PROAG or equivalent (FY)</th> <th style="text-align: center;">Most recent PACD (mo/yr)</th> <th style="text-align: center;">Planned LCP Cost ('000)</th> <th style="text-align: center;">Amount Obligated to Date ('000)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1981</td> <td style="text-align: center;">PACD 6/90</td> <td style="text-align: center;">13,510m</td> <td style="text-align: center;">13.510m</td> </tr> </tbody> </table>	First PROAG or equivalent (FY)	Most recent PACD (mo/yr)	Planned LCP Cost ('000)	Amount Obligated to Date ('000)	1981	PACD 6/90	13,510m	13.510m
First PROAG or equivalent (FY)	Most recent PACD (mo/yr)	Planned LCP Cost ('000)	Amount Obligated to Date ('000)							
1981	PACD 6/90	13,510m	13.510m							

REMARKS

E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR <p style="text-align: center;"><i>Action(s) Required</i></p> <p>Prior to conducting this evaluation, the action decision had already been approved by the Mission to terminate the project in May 1989 approx. 1 year before the scheduled PACD of June 30, 1990</p>	Name of officer responsible for Action <p style="text-align: center;">J. DeFler</p>	Date Action to be Completed
(Attach extra sheet if necessary)		

SIGNATURES

F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION: mo <u>06</u> day ___ yr <u>89</u>			
G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS: Revised and approval updated 05/90			
Signature Typed Name	Project/Program Officer  <u>Julie DeFler</u>	Representative of Borrower/Grantee N/A	Evaluation Officer  <u>Ann Schwartz</u>
	Date: <u>May 90</u>	Date: _____	Mission or AID/W Office Director  <u>Malcolm S. Purvis</u>
	Date: <u>May 90</u>	Date: <u>May 90</u>	Date: <u>May 90</u>

H. EVALUATION ABSTRACT (do not exceed the space provided)

The purpose was to institutionalize road maintenance systems in three districts. Implementation was assured by the Bangladesh Ministry of Local Government, Wilbur Smith Associates and Bangladesh Consultants Limited as technical assistance contractors and Syracuse University for studies on local public finance. This final evaluation of the Project was conducted (2/89-6/89) by a team provided through the S&T sponsored Decentralization: Finance and Management Project (DFM) which conducted interviews, document review and inspected 13 project funded road segments. This process will contribute to policy reform and the design of future infrastructure projects. The major findings and conclusions are:

- Despite the accomplishment of a number of planned outputs (road improvements, training, equipment procurement) real progress toward achieving the project purpose was not realized. This can be partially attributed to a new Bangladesh Government (BDG) decentralization policy announced in 1982, the BDG Rural Development Strategy and divergent perceptions of USAID and the BDG concerning project purpose.
- To increase the likelihood that maintenance activities will continue after external support is terminated, efforts should be made to strengthen the abilities of local governments to finance maintenance.
- Future undertakings in the road sector should involve systematic data collection and experimentation in maintenance.

The evaluation revealed the following lessons based on the FRMIP experience:

- Changing environments and the variety of incentives faced by actors implicated in a project can often lead to differing perceptions of what project activities are designed to achieve.
- A thorough understanding of policy environment is a prerequisite of project design and monitoring of evolving policies is essential during implementation.
- The FRMIP experience clearly demonstrates that institutionalization objectives should not be sought through the creation of ad hoc project-created and -sponsored entities and that efforts to improve on overall systems for the delivery of public services should be preceded by a thorough understanding of the institutional requirements for sustainable impact.

I. EVALUATION COSTS

1. Evaluation Team		Contract Number OR	Contract Cost OR	Source of
Name	Affiliation	TDY Person Days	TDY Cost (US\$)	Funds
Associates in Rural Development Decentralization Finance and Management Project		DHR-5446-Z CO-7033-00 order No.5	\$121,074	PIO/T 388-0056-3- 60170

2. Mission/Office Professional
Staff Person-Days (estimate) _____

3. Borrower/Grantee Professional
Staff Person-Days (estimate) _____

ABSTRACT

COSTS

A.I.D. EVALUATION SUMMARY PART II

J. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (Try not to exceed the 3 pages provided)

Address the following items:

- Purpose of activity(ies) evaluated
- Purpose of evaluation and Methodology used
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office: USAID/DHAKA

Date this summary prepared: November 1989

Title and Date of Full Evaluation Report: Bangladesh Feeder Roads Maintenance and Improvement Project

Following an initial three years of effective implementation of the Zila Roads Maintenance and Improvement Project (ZRMIP), it was determined that due to delays in project start up and an over ambitious implementation schedule, achievement of the project's primary objectives would be impossible. However, significant progress had been registered in the third year of implementation which provided optimism for a redesign and extension. The redesign resulted in an amended Project Paper (PP) approved in May 1986 and which renamed the project Feeder Roads Maintenance and Improvement (FRMIP).

The PP amendment noted that ZRMIP underestimated the time required to develop an institution capable of maintaining the feeder road network and therefore FRMIP placed primary emphasis on institutional development. The goal and purpose of FRMIP remained essentially the same as the original project, the goal being increased agricultural production and employment generating opportunities through an improved feeder road network and the purpose being improved rural access by institutionalizing routine feeder road maintenance at the district level of government and increasing the pace of road development.

This evaluation of FRMIP was carried out in conjunction with a rural and feeder roads sector assessment from February to June 1989 by a team provided through the Decentralization: Finance and Management Project (DFM).

The evaluation and sector assessment are part of a process through which USAID is seeking a better understanding of principal constraints to the development and sustainability of rural road networks in Bangladesh. This process will produce valuable information and analysis for the design of future infrastructure projects to be funded by USAID and provide a policy framework for similar undertakings by the BDG and other donors.

At the central government level, the Ministry of Local Government, Rural Development and Cooperatives (MLG) was the principal BDG implementing agency. A U.S. consulting firm, Wilbur Smith Associates (WSA), in partnership with Bangladesh Consultants Limited (BCL) was retained under a host-country contract to furnish technical assistance and provide commodity procurement services. Under a separate arrangement, Syracuse University was contracted to conduct studies on local public finance in an effort to increase local resource mobilization capacity and address the issue of recurrent-cost financing.

SUMMARY

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Despite the accomplishment of a number of planned outputs, real progress toward achieving the project purpose of institutionalizing road maintenance systems and annual maintenance programs in the three districts was not realized. This can be partially attributed to: 1) a new decentralization policy announced by the BDG in 1982, 2) the Rural Development Strategy formulated by the Planning Commission, and 3) a significant divergence in the perceptions of USAID and the BDG concerning the project's purpose.

The BDG's decentralization policy announced in 1983 shifted the major responsibility for development activities and financial resources to newly upgraded subdistricts (upazilas) and divided the 22 old districts into 64 "new" districts. Under this policy, districts no longer had legal authority for locally financed road-scheme contracting and related functions, but the project continued to rely on the district level for these functions. Thus, ad hoc District Road Development Committees (DRDCs) were created in the 14 "new" FRMIP districts (carved out from the original 3 old districts) to provide a legal basis for issuing road contracts and making other road-related administrative decisions in the context of the project. This strategy to provide a framework for project implementation served as an impediment to achieving FRMIP's institution-building objectives by attempting to support a temporarily defunct level of the Bangladesh public administration.

The Planning Commission's Rural Development Strategy, based on the concept of growth centers required that projects focusing on feeder road B improvement concentrate investments on roads which connected growth centers with upazila headquarters or to the national highway network. In applying this principle to road investments, site selection was done largely at the central level and, hence, precluded local government participation in decision-making, which is needed to foster greater commitment to maintenance.

From the BDG's standpoint, realization of road improvement schemes constituted the principal measure of project success. However, from USAID's perspective, the project did not achieve its intended purpose of institutionalized maintenance. This fundamental divergence in the perceptions of the BDG and USAID as to the project's primary purpose has persisted over the life of the project and reflects a basic communication gap between the two parties. Earlier and periodic joint evaluations and more frequent field-level monitoring might have helped correct this problem.

An audit of the project was carried out in September 1986, which showed that many of the project's deficiencies were due to USAID's lack of established policies and effective procedures to ensure that the BDG complied with project covenants and that other critical components of the project were undertaken.

A number of valuable lessons have been learned through the experience of FRMIP which suggest specific steps that may be taken in designing and implementing future infrastructure projects in Bangladesh.

Lessons Learned: Despite efforts to clearly define project purpose and objectives, changing environments and the variety of incentives faced by actors implicated in the project can often lead to differing perceptions of what any particular set of activities is designed to achieve. Without a clear consensus among all parties on the expected outcomes of a project, its effectiveness may be compromised.

A thorough understanding of policy environment is a prerequisite of project design. Policies can change during implementation and should therefore be the object of careful monitoring to detect inconsistencies between project objectives, implementation strategies and current policy.

The FRMIP experience clearly demonstrates that institution-building or institutionalization objectives should not be sought through the creation of ad hoc project-created and -sponsored entities and that efforts to improve on overall systems for the delivery of public services should be preceded by a thorough understanding of the institutional requirements for sustainable impact.

Recommendations: For new projects, it is recommended that host government policies be closely monitored to identify any changes that could have a potential impact on project outcomes. Negotiations should be undertaken to make necessary adjustments to the project and/or modify the policies in question.

To increase the likelihood that maintenance activities will continue after external support is terminated, concerted efforts should be made to strengthen the capabilities of local governments to finance maintenance - this will require policy initiatives at the highest levels and will necessitate that all donors active in the roads sector work with the BDG in support of such policy changes.

Future undertakings in the road sector should involve systematic data collection and experimentation in maintenance including baseline surveys and the evaluation of benefits of specific investments which focus on road-use costs rather than production responses.

K. ATTACHMENTS (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier)

ATTACHMENTS

Bangladesh: Feeder Roads Maintenance and Improvement Project Evaluation

L. COMMENTS BY MISSION, AID/W OFFICE AND BORROWER/GRANTEE

MISSION COMMENTS ON FULL REPORT

XD-ABB-402-A
64734



DECENTRALIZATION: FINANCE & MANAGEMENT PROJECT



Managed by
Associates in Rural Development, Inc.

In collaboration with
Syracuse University • Metropolitan Studies Program/Maxwell School of Citizenship & Public Affairs
Indiana University • Workshop in Political Theory & Policy Analysis

Sponsored by
Agency for International Development

1

BANGLADESH:

**FEEDER ROADS MAINTENANCE AND
IMPROVEMENT PROJECT EVALUATION**

November 1989

This evaluation was carried out in conjunction with the Bangladesh Rural and Feeder Roads Sector Assessment during the months of February to June 1989. The evaluation was prepared by David Gephart, consultant for the Decentralization: Finance and Management Project (DFM); Louis Siegel, Senior Program Manager for DFM; Ed Connerley, consultant for DFM; and Larry Schroeder, Research Associate for DFM and Professor of Public Administration at the Metropolitan Studies Program, Syracuse University.

Other members of the Sector Assessment team who contributed to this evaluation include Dr. Muhammad Mustafa Alam, Dr. Ahmed Shafiqul Huque, Dr. Selim Jahan, Ms. Iben Nathan, Mr. Ahamed Kafil Uddin, and Dr. Susan Wynne.

DFM is sponsored by the Office of Rural and Institutional Development of the Bureau for Science and Technology (S&T/RD) of the U.S. Agency for International Development (AID). This evaluation was funded by the USAID Mission in Bangladesh under a work order to DFM.

Associates in Rural Development, Inc. of Burlington, Vermont, is the prime contractor for DFM under AID contract number DHR-5446-Z-00-7033-00. Subcontractors are the Metropolitan Studies Program of the Maxwell School of Citizenship and Public Affairs at Syracuse University and the Workshop in Political Theory and Policy Analysis at Indiana University.

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ACRONYMS, ABBREVIATIONS, and GLOSSARY

ADP	Annual Development Program--BDG annual budget for development schemes and donor projects
AID	Agency for International Development, Washington, DC
ARE	assistant resident engineer, WSA/BCL staff assigned to project district
BCL	Bangladesh Consultants Limited
BDG	government of the People's Republic of Bangladesh
COP	chief of party, for the WSA/BCL staff
DFM	Decentralization: Finance and Management project
district	project target area--one of three districts, Rangpur, Sylhet, or Faridpur; used interchangeably with zila
DRDC	District Road Development Committee
FRB	Type B feeder road, Planning Commission road classification
FRA	Type A feeder road, Planning Commission road classification
FRMIP	Feeder Road Maintenance and Improvement Project
FSN	foreign service national--an AID service category
HBB	herring-bone brick
IDP	Infrastructure Development Project
km	kilometer(s)
LGEB	Local Government Engineering Bureau
LOP	life of project
MLG	Ministry of Local Government, Rural Development and Cooperatives
NGO	nongovernmental organization
NORAD	Norwegian Agency for International Development
PACD	project assistance completion date
parishads	councils
PAS	Public Administration Services
PD&E	Office of Project Development and Engineering
PIO	Project Implementation Office--BDG office for project implementation in the MLG
pro forma	document approved by Central Government for donor project activities that details project documentation, activities, and implementation procedures
RDRS	Rangpur/Dinajpur Rural Services Project
RESP/IDP	Rural Employment Sector Programme/Infrastructure Development Project--Swedish (SIDA), Norwegian (NORAD) development program in Bangladesh
SAE	sub-assistant engineer--LGEB staff
SIDA	Swedish International Development Agency
upazila	local government entity at subdistrict level
USAID	U. S. Agency for International Development, Dhaka Bangladesh

WBM water-bound macadam
WPW Works Program Wing
WSA Wilbur Smith & Associates--U.S. consulting firm
providing technical assistance to the project
in partnership with BCL, a local consulting firm
XEN executive engineer, LGEB staff -- one for each
district; heads district LGEB office
zila local government entity used interchangeably with
district
ZRMIP Zila Roads Maintenance and Improvement Project

I. EXECUTIVE SUMMARY

This evaluation of the Feeder Roads Maintenance and Improvement Project (FRMIP), funded by the U.S. Agency for International Development in Dhaka, Bangladesh (USAID) and the Government of the People's Republic of Bangladesh (BDG), was carried out in conjunction with a rural and feeder roads sector assessment during the months of February through June 1989 by a team provided through the Decentralization: Finance and Management Project (DFM).

The evaluation and sector assessment are part of a process through which USAID is seeking a better understanding of principal constraints to the development and sustainability of rural road networks in Bangladesh. This process will produce valuable information and analysis for the design of future infrastructure projects to be funded by USAID and provide a policy framework for similar undertakings by the BDG and other donors.

The project began in 1981 as the Zila Roads Maintenance and Improvement Project (ZRMIP). Under the original grant agreement, USAID provided U.S.\$9.2 million and the BDG, U.S.\$4.6 million for local-costs support. The purpose of ZRMIP was to develop an institutionalized capability to maintain feeder roads at the district (zila) level of government. Project activities were planned in three selected districts and consisted of five basic elements: road maintenance, road improvement, training, technical assistance, and equipment procurement.

At the central government level, the Ministry of Local Government, Rural Development and Cooperatives (MLG) was the principal BDG implementing agency. A U.S. consulting firm, Wilbur Smith & Associates (WSA), in partnership with Bangladesh Consultants Limited (BCL) was retained under a host-country contract to furnish technical assistance and provide commodity procurement services. Under a separate arrangement, Syracuse University was contracted to conduct studies on local public finance in an effort to increase local resource mobilization capacity and address the issue of recurrent-cost financing.

Compliance with conditions precedent and other problems related to selection of the technical assistance contractor and equipment procurement delayed the effective start of project activities. This led to the need to extend the original project assistance completion date (PACD) under the existing grant agreement and eventually to an amendment (Amendment No. 3, dated 31 August 1986), which extended the project to 30 June 1990 with an additional U.S.\$11.8 million in funds from the Agency for International Development in Washington, DC (AID). The project

was renamed Feeder Roads Maintenance and Improvement Project (FRMIP).

The project's major outputs from November 1983 to September 1987 can be summarized as follows:

- improvement of 83 kilometers (km) of feeder roads to all-weather bituminous-carpet standards;
- partial improvement of 40 km of feeder roads;
- maintenance of 147 km of paved and dirt roads;
- local revenue studies;
- additional studies, including a road inventory for the three project districts (Sylhet, Faridpur, and Rangpur), an economic feasibility assessment of project-improved roads, a socioeconomic baseline study, and priority ranking of Type B feeder roads (FRBs) in three project districts;
- preparation and dissemination of a number of technical and training manuals;
- in-country, U.S., and third-country training of 429 Local Government Engineering Bureau (LGEB) staff; and
- procurement of road construction and maintenance equipment including heavy-duty trucks and rollers, construction materials and laboratory testing equipment, water trailers, tar boilers, motorcycles and four-wheel drive vehicles.

Although the project's training component surpassed targeted objectives in quantitative terms, the link between training and on-the-job applications was weak. Only a few trainees could show specific on-the-job applications of the training they had received. This was due to the project's inability to institutionalize maintenance programs. Furthermore, the utilization of project-prepared manuals and reports has been marginal. LGEB staff are using their own manuals for contract work and, to date, have not formally incorporated the contents of manuals prepared under FRMIP.

The equipment procurement component of the project encountered a number of problems. An initial equipment study by the technical assistance contractor produced a recommended list of equipment, but failed to take into account the absence of maintenance facilities in the LGEB project area. The initial order did not include the spare parts needed to perform the most

basic maintenance. Subsequently, in an attempt to reduce cost, spare parts were procured under separate tenders which delayed their arrival. Some of the equipment, notably trucks and tar boilers, were not well-suited to local conditions and preferences. The laboratory equipment procured with project funds has been effectively utilized by project-trained LGEB staff and appears to be well-maintained.

An equipment utilization study was done by the technical assistance contractor in 1988. Among other things, it estimated that utilization rates for all road equipment in the project districts, including FRMIP equipment, was less than 20 percent of rated life-use. The study findings also indicated that simple maintenance was not being performed and a lack of spare parts posed a major problem. The study concluded that aside from the motorcycles and vehicles needed by LGEB staff to monitor road work in the district and the engineering and testing equipment for quality control, the project should not make subsequent investments in construction equipment for road improvement and maintenance.

Despite the accomplishment of a number of planned outputs, real progress toward achieving the project purpose of institutionalizing road maintenance systems and annual maintenance programs in the three districts was not realized. This can be partially attributed to several factors, including a new decentralization policy announced by the BDG in 1982, the Rural Development Strategy formulated by the Planning Commission, and a significant divergence in the perceptions of USAID and the BDG concerning the project's purpose.

ZRMIP and, subsequently, FRMIP were designed to develop an institutional capacity for road maintenance at the zila level of government. The BDG's new decentralization policy (Local Government Ordinance of 1983) shifted the major responsibility for development activities and financial resources to newly upgraded upazilas (subdistricts) and divided the 22 old districts into 64 "new" districts. Under this policy, districts no longer had legal authority for locally financed road-scheme contracting and related functions, but the project continued to rely on the district level for these functions. Consequently, ad hoc District Road Development Committees (DRDCs) were created in the 14 "new" FRMIP districts (carved out from the original three old districts) to provide a legal basis for issuing road contracts and making other road-related administrative decisions in the context of the project. This strategy to enhance the framework for project implementation served as an impediment to achieving FRMIP's institution-building objectives by attempting to support a temporarily defunct level of the Bangladesh public administration.

The Planning Commission's Rural Development Strategy, based on the concept of growth centers, required that projects focusing on feeder road B (FRB) improvement concentrate investments on roads that connected growth centers with upazila headquarters or to the national highway network--whichever was shortest. In applying this principle to road investments, site selection was done largely at the central level, thereby precluding the local government participation in decision making needed to foster greater commitment to maintenance.

The BDG project pro forma¹, prepared in conjunction with FRMIP's extension in 1986, included a list of roads to be improved under the project that corresponded to the Planning Commission's strategy. A number of these road improvement schemes were carried out. From the BDG's standpoint, realization of these schemes constituted the principal measure of project success. However, from USAID's perspective, the project did not achieve its intended purpose of institutionalized maintenance and, therefore, could only be considered a failure. This fundamental divergence in the perceptions of the BDG and USAID regarding the project's primary purpose has persisted over the life of the project and reflects a basic communication gap between the two parties. Earlier and periodic joint evaluations might have helped correct this problem.

FRMIP's goal was increased agricultural production, which was to be achieved through the improvement and regular maintenance of feeder roads. The assumption was that road improvements and maintenance would result in lower-cost transportation, thereby reducing the cost of agricultural inputs and increasing the profitability of marketing surplus production. Several studies were conducted in an attempt to verify this assumption, but failed to provide empirical evidence on the returns of maintenance efforts and the impact of passable roads on agricultural production. Transportation is just one input to the agricultural production process, and even with the price effects of improved transportation infrastructure, many other factors must be present to produce an overall positive effect on rural production.

It is evident from FRMIP's experience that even under the best circumstances, the measurement of returns on road investments is extremely difficult. In any subsequent project, much greater concern should be shown for the benefits of road improvement and maintenance than appears to have been the case

BDG prepares a project pro forma for all donor-financed projects in the country. These documents describe projects in a standardized format and are analogous to a project paper. Proformas are approved by the Planning Commission and included in the Annual Development Program (ADP).

under FRMIP. If such measurements are to be possible, it is essential to conduct baseline surveys early during the project. Such surveys should be designed so they can be used for subsequent evaluations and to assist in selecting road segments to be included in the project. Since production responses to lower transportation costs are unlikely to be immediate, evaluation of the benefits of road projects should focus on road-use costs rather than production responses.

Although the project design emphasized the importance of ongoing monitoring and evaluation during implementation, USAID management efforts were inadequate in this regard, especially during the project's initial years. A number of the project's shortcomings can be attributed to inadequate monitoring of implementation by USAID management. Of particular importance is the lack of joint USAID/BDG field visits and consultations with field-level personnel in the project areas. An audit of the project was carried out in September 1986, which showed that many of the project's deficiencies were a result of USAID's lack of established policies and effective procedures to ensure that the BDG complied with project covenants and that other critical components of the project were undertaken.

It was not until July 1987 that a Rapid Rural Appraisal done by USAID officially recognized the fact that little or no discernible progress had been made toward achievement of the project purpose. This report represented a major turning point and set the stage for the eventual decision to terminate the project. Based on the conclusions of the Rapid Rural Appraisal, USAID prepared an action plan that proposed a limited number of activities for a transition period of July 1987 through August 1988. These activities included a redesign effort to restructure the project and a limited amount of road improvement and maintenance to complete work that had been previously started. It was also decided to extend the existing technical assistance under a direct contract with USAID to supervise road work and complete certain special studies.

The action plan provided for termination of the project in September 1988 if agreement on a project redesign could not be reached. Discussions between USAID and the BDG on a redesign were unsuccessful--in large part, because BDG officials were preoccupied with the design of two new and much larger multilateral donor road projects (Asian Development Bank and World Bank). Consequently, in March 1988, USAID decided to phase out the project over the 1988/1989 work season. However, agreement was reached, in principle, on designing a new project directed toward road infrastructure development at the local government level. Preliminary efforts in this direction were to include an evaluation of FRMIP, a major rural and feeder roads sector assessment, and a contractor management study. The findings of these studies would be used to assess the feasibility

and prepare for eventual design of a new AID-funded infrastructure services project to be carried out at the local government level. The studies were initiated in February 1989 and are now being completed.

A number of valuable lessons have been learned through the experience of FRMIP that suggest specific steps that may be taken in designing and implementing future infrastructure projects in Bangladesh.

Lessons Learned:

Despite efforts to clearly define project purpose and objectives in official agreements, changing circumstances and the variety of incentives faced by actors implicated in the project can often lead to differing perceptions of what any particular set of activities is designed to achieve. Without a clear consensus among all parties on the expected outcomes of a project, its effectiveness may be compromised.

A thorough understanding of policy environment is a prerequisite of project design. Policies can change during the implementation of a project and should therefore be the object of careful monitoring to detect inconsistencies between project objectives, implementation strategies, and current policy.

The FRMIP experience clearly demonstrates that institution-building or institutionalization objectives should not be sought through the creation of ad hoc, project-created and -sponsored entities, and that efforts to improve overall systems for the delivery of public services should be preceded by a thorough understanding of the institutional requirements for sustainable impact.

Training programs require careful monitoring to assure that objectives are being met and that there are proper incentives and an environment which are conducive to the application of newly acquired knowledge and skills.

Recommendations:

For new projects, it is recommended that the host government's policy environment be closely monitored to identify any policy changes that could have a potential impact on project outcomes. Negotiations with the host government should be undertaken to make necessary adjustments to the project and/or modify the policies in question.

To increase the likelihood that maintenance activities will continue after external support is terminated, concerted efforts should be made to strengthen the abilities of local governments to finance maintenance. This will require policy initiatives at

the highest levels and will necessitate that all donors active in the roads sector work with the BDG in support of such policy changes.

Future undertakings in the road sector should involve systematic data collection and experimentation in maintenance including baseline surveys and the evaluation of benefits of specific investments which focus on road-use costs rather than production responses.

It is recommended that considerable attention be given to the suitability of project-financed equipment and procurement be made only when an adequate maintenance capability is demonstrated and spare parts availability is assured.

In the area of training, it is suggested that well-defined objectives be established and that efforts be made to foster a clear understanding among project managers, trainers, and trainees of how these objectives relate to a project's overall objectives.

II. INTRODUCTION

This evaluation of the Feeder Road Maintenance and Improvement Project (FRMIP) was requested by the Bangladesh Government Planning Commission in March 1988 in response to USAID's decision to unilaterally terminate the project. USAID was particularly concerned about numerous problems experienced during project implementation, including divergent perceptions of the project's purpose by USAID and the BDG. The USAID decision was based on a Rapid Rural Appraisal Report and the subsequent FRMIP Action Plan which were completed in the summer of 1987. The appraisal report concluded that the current implementation structures and policies would not permit attainment of the project purpose and that insufficient time remained within the time period available to conduct a redesign of the project. The Planning Commission felt that an evaluation would be useful and necessary to identify lessons learned for future efforts.

The evaluation of FRMIP was carried out under a work order to DFM, which is managed by Associates in Rural Development, Inc. of Burlington, Vermont, in collaboration with Syracuse University and Indiana University. It was conducted concurrently with another DFM activity in Bangladesh--the Rural and Feeder Roads Sector Assessment. Both activities were undertaken between February and June 1989. This evaluation and the sector assessment provide information, analysis, and strategies for BDG and donor agencies regarding future efforts to develop and sustain the transportation infrastructure in rural Bangladesh.

A. Methodology

As called for in the evaluation's scope of work (see Appendix A), the methodology used by the evaluation team consisted of field data collection, inspection of completed road segments funded by the project, and discussions with BDG officials at national (MLG, LGEB, Project Implementation Office [PIO]) and local (zila and upazila) levels. Interviews were also conducted with representatives and technicians of the technical assistance contractor, WSA and Bangladesh Consultants Limited (BCL), USAID officials, and nongovernmental organizations (NGOs) involved in road work in Bangladesh. Additional information was obtained by reviewing project documents provided by the technical assistance contractor and USAID.

From 23 April through 16 May 1989, 16 road sites were visited (see Appendix B), 13 of which were financed by FRMIP. This sample took into account the geographic diversity of the area served by the project and differing physical characteristics (earthen, water-bound macadam, herringbone brick, and bituminous

carpet) of roads being reconstructed or maintained with FRMIP funding.

B. Organization of the Report

In addition to the Executive Summary and this introduction, the report contains three principal sections: Project History, Findings and Conclusions, and Recommendations and Lessons Learned.

The section on project history traces the milestones of project implementation through three principal phases: start-up, extension, and phaseout. This history is extremely important to a thorough understanding of the project and provides valuable background for the more analytical section which follows.

The next section of the report discusses the major findings and conclusions of the evaluation organized around a number of areas defined in the scope of work. In each case, an attempt has been made to analyze the reasons for the relative success or failure of the different project components. The recommendations and lessons learned in the final section emerge from this analysis.

The concluding section summarizes the experience of FRMIP in terms of lessons learned and provides a number of recommendations for future activities in support of sustainable road sector development in Bangladesh.

III. PROJECT HISTORY

The project's history can be traced through three principal phases from the start of implementation in 1981 through its phaseout in 1989. The following subsections review each phase in terms of accomplishments and problems encountered in order to provide a clear understanding of the major issues faced during eight years of project implementation.

A. Phase I--Start-Up

ZRMIP was authorized on 4 June 1981 and a grant agreement signed on 20 August 1981. The PACD was set for 1 December 1984 with life-of-project (LOP) funding of U.S.\$9.2 million. The agreement included a BDG contribution of U.S.\$4.6 million in local cost support (Taka 69 million) for a total project cost of U.S.\$13.8 million.

ZRMIP was the first AID project in Bangladesh designed for implementation at the local government level with the primary purpose of developing the institutional capability of local government to maintain feeder roads. The three districts of Rangpur, Faridpur, and Sylhet were selected as project target areas. National- and district-level representations of the Works Program Wing (WPW, renamed the LGEB in 1985) within the MLG's Local Government Division, were the primary implementing agencies.

The project's initial design included five basic activities:

- road maintenance,
- road improvement,
- training,
- technical assistance, and
- equipment procurement.

As a separate project-funded activity, Syracuse University was contracted to carry out a two-year study of the local government revenue system. The study's purpose was to analyze existing mechanisms of local public finance and identify ways to increase the resource mobilization capacity of the local government and

contract to provide technical assistance and commodity procurement services for the project. Project activities began in October 1982 with mobilization of the WSA team.

The 13-month delay encountered in project start-up was due principally to problems related to BDG compliance with conditions precedent stipulated in the grant agreement and the lengthy process of preparing a request for proposal, proposal review, and technical assistance contract award.

Project activities during the first two years following the start of effective implementation were primarily

- preparation of an inception report,
- development of technical manuals for road maintenance,
- initiation of a road inventory survey for each of the three districts,
- start of formal and on-the-job training, and
- initiation of road improvement and maintenance work.

In addition to these activities, the efforts of the WSA/BCL/PAS team were directed mainly toward establishing a road maintenance organization model in the three districts similar to that found at the county level of local government in the United States. Concurrently, WSA/BCL carried out training activities and prepared specifications and equipment lists for commodity procurement. However, due to problems concerning the source and origin of certain BDG-preferred equipment, the purchase and delivery of project equipment was not completed until 1986.

The two-year local revenue study conducted by Syracuse University terminated with an in-country workshop in early 1985, at which findings and recommendations were presented. Although this exercise resulted in a heightened awareness and interest in issues of local government finance in Bangladesh, no specific action has occurred as a result of its findings.

Road construction work in Bangladesh is done during a work season that runs from November to June--a seven- or eight-month period between the monsoon rains. No project road work was carried out during the 1981/1982 season, but during the next three years, 83 km of feeder road were improved to all-weather bituminous-carpet standards, another 40 km were partially improved, and 147 km of paved and dirt roads in the three districts received some maintenance.

Despite the achievement of a number of road improvement and maintenance works during initial years of project implementation, ZRMIP was unable to make any significant progress toward establishing an institutionalized road maintenance system and annual road maintenance program in the three districts. This situation was exacerbated by a new BDG decentralization policy, announced in 1982, that restructured the country's basic politico-administrative organization and assigned major responsibility for development activities to the newly created upazila level of local government. This policy essentially shifted major decision-making authority and resources away from the zila, where the project had intended to build local government capacity for road maintenance and improvement. This reorganization resulted in subdivision of the three project districts into 14 new entities, also called districts.

B. Phase II--Project Extension

In light of delays encountered during the early years of project implementation, major changes in local government structure, and ZRMIP's numerous accomplishments during the first three years, a grant agreement amendment was prepared and signed on 31 August 1986. Amendment No. 3 to the grant agreement extended the PACD to 30 June 1990, authorized an additional U.S.\$11.8 million in AID funds, and set the BDG contribution at Taka 97 million, bringing total project costs to U.S.\$27.6 million.

At this time, the project was renamed Feeder Roads Maintenance and Improvement Project and two new structures were added to the project's organization: PIO within the MLG and DRDCs in FRMIP target districts. The PIO, headed by a project director, was assigned the role of coordinating the implementation of project activities at the central level of the BDG.

The politico-administrative reorganization of local government noted above meant that institution-building at the zila level might become meaningless. Nevertheless, the grant agreement amendment stressed that "responsibility for maintaining and improving feeder roads should not rest with the upazilas," reflecting the assessment of USAID that road works funded by the project should remain the responsibility of district-level government.

However, this decision to retain project activities under the zila did create a fundamental jurisdictional problem. Under the BDG's new decentralization policy, districts no longer had legal authority for road scheme contracting and related functions. Since the project depended on the zila level for these functions, the grant agreement amendment included the

creation of ad hoc DRDCs in the FRMIP districts to provide a legal basis for issuing road contracts and making other road-related administrative decisions in the context of the project.

Concurrent with project extension was another new government policy--the Planning Commission's Rural Development Strategy, which had been announced in 1984, but in 1986, had direct implications for FRMIP. The policy required that projects focusing on improving FRBs concentrate their investments on roads connecting "growth centers" to upazila headquarters or to the national highway network. The government's project pro forma for FRMIP cited one project objective as the improvement of "the physical facilities of the Growth Centers in order to enhance their economic and commercial importance." In the FRMIP case, the project pro forma listed FRB road sections in the three greater districts as targets for improvement under project funding. The initial version of the BDG pro forma was silent on the issue of maintenance. USAID required that the pro forma be consistent with the grant agreement, so negotiations ensued between the two parties resulting in mutually agreeable modifications to the pro forma which incorporated maintenance as an objective of the project. During these negotiations, USAID limited disbursements to work on contracts that had been let in previous years.

The project did manage to accommodate some maintenance at the upazila level. These were usually classified as pilot maintenance schemes, whereby the project would pay 75 percent of the costs through the Road Maintenance fund, with the upazila using their own and Annual Development Program (ADP) funds to finance the remaining 25 percent. This strategy was not entirely successful as the upazilas were frequently unable to meet their 25 percent funding obligation.

An external AID audit of the project was done in August and September 1986. A number of negative findings were documented; principally, that after five years and U.S.\$7.8 million in AID expenditures, few measurable accomplishments had been made toward achieving the project's purpose. The audit report also found that the BDG had not made required contributions to the project and there had been excessive delays in equipment procurement.

C. Phase III--Phaseout

In May 1987, USAID conducted a Rapid Rural Appraisal of FRMIP, which again showed that little or no discernible progress had been made in achieving the original project purpose, although significant achievements had been made in accelerating the rate of FRB road improvement. As a result of this appraisal, USAID prepared an action plan which proposed that July 1987 through August 1988 be considered a transition period during which a

limited number of activities would occur. These included the following:

- initiating a redesign effort to enable achievement of project objectives;
- limiting road improvement and maintenance activities to completing work previously started, as well as banning funding of any bituminous carpeting and further equipment procurement;
- extending the technical assistance contract through 31 August 1988 to supervise road work and complete special studies; and
- carrying out a comprehensive feeder roads sector assessment.

The action plan stipulated that, "if agreement on project redesign cannot be reached, the project would end in September 1988 after termination of the transition period." The redesign would also require a corresponding reformulation of the BDG's project pro forma.

As a result of the Rapid Rural Appraisal, USAID approached the BDG and initiated serious discussions concerning early termination of the project and de-obligation of the remaining funds or a redesign of the project and continued implementation utilizing the remaining funds available under the 1986 project extension. The BDG ultimately did not agree to a project redesign for two reasons:

- the requirement to reformulate the project pro forma which was based on existing rural development policies, and
- preoccupation with ongoing negotiations with the World Bank and Asian Development Bank on major road sector loans which did not question key BDG policies.

In March 1988, USAID determined that the project would be phased out over the 1988/1989 season, terminating one year prior to the projected PACD. It was also decided that no new funds would be provided by USAID, but ongoing schemes begun during the 1987/1988 season would be completed.

Agreement was also reached on the process of designing a new AID-funded project to focus on road infrastructure development at the local government level. The design would take into account findings from the evaluation of FRMIP, a major rural and feeder roads sector assessment, and a contractor management study.

These studies would concentrate on the rural road sector, addressing problems with construction, maintenance, technical support, and funding as well as zila and upazila political considerations. The studies were initiated in February 1989 and are now being completed. Their findings and recommendations are expected to contribute to the design of future AID and other donor projects.

IV. FINDINGS AND CONCLUSIONS

A. Project Goal and Purpose

As stated in the grant agreement and its amendment, the goal of the initial ZRMIP and subsequent FRMIP was "increased agricultural production, particularly food grains." This outcome was to be achieved through the improvement and regular maintenance of feeder roads that would presumably result in lower transportation costs thereby reducing the cost of agricultural inputs and increasing the profitability of marketing surplus production. The project purpose was to improve rural access by institutionalizing an effective program of routine maintenance at the district level of government and increasing the pace of road development.

One basic assumption of the project design was the relationship between its goal and purpose. Although no empirical evidence was available at the time in Bangladesh to establish a relationship between passable roads and benefits to the rural economy, it was a reasonable assumption given evidence from other countries and widely accepted models. The project design did take into account the need to test this hypothesis over the life of the project by including studies that would attempt to investigate benefits derived from improved and maintained road networks. Three different efforts were undertaken over the course of the project that directly or indirectly assessed increased agricultural production and employment generation opportunities through an improved feeder road network: "Socioeconomic Baseline Study for Determining the Impact of Road Maintenance and Improvement" (September 1986), "Report on Economic Feasibility Assessment" (April 1988), and "Report on Recurrent Cost Analysis" (April 1988).

Ideally, an evaluation of goal achievement is based on an analysis of pre- and post-project indicators. However, in this case, the "baseline" study was not conducted until midway through the project. It included comparisons of marketing patterns between "accessible" and "interior" markets that suggested significant user cost savings associated with roads, but this is not equivalent to a full evaluation of the project's impact. Since this end-of-project evaluation did not undertake post-project data collection on improved and maintained road segments, it is impossible to draw any conclusions in this regard.

Of particular relevance to the relationship between project activities and goal achievement is the conclusion in the "Report on Recurrent Cost Analysis" that FRMIP performance on meeting annual maintenance requirements during the five-year period was poor, indicating that an annual maintenance program had not become institutionalized. Therefore, there is no feasible way to

analyze the impacts of the maintenance portion of the project on its overall goals.

The "Report on Economic Feasibility Assessment" produced extremely pessimistic findings concerning the economic payoffs for a sample of project roads when net present values were computed using analytical techniques that focus on increments to consumer surplus, based on actual traffic counts and transportation savings. Of 30 road segments evaluated in the three study districts, only 18 (60 percent) showed positive net present values for improvement and maintenance efforts. However, a key factor behind this finding was the very low vehicle counts observed on the roads (due, perhaps, to the civil disturbances occurring simultaneously with the traffic counts).

Two additional comments regarding this study should be noted. First, traffic counts were conducted during the dry season, and apparently no effort was made to introduce any data on seasonality of road use. Second, the method employed was based on user cost savings associated with motorized vehicles. Since the bulk of rural freight is carried by nonmotorized vehicles, the study completely failed to examine the most substantial potential benefits attainable from road improvements.

The findings also raise a question concerning the applicability of the usual, deductive model of road transportation benefits, which suggests that agricultural production and, therefore incomes, will rise as the result of road investments. Data collected in the FRMIP baseline survey generally concur with similar studies conducted in Bangladesh--namely, good roads carry greater amounts of freight than poor ones. However, this does not necessarily mean that improving a road will generate increased agricultural production, at least not in the short run. Transportation is only one input to the agricultural production process. Increased farmgate prices and lowered costs for inputs may accompany road improvements, but the extent of any production increase depends on the elasticity or responsiveness of producers to such changes. This elasticity may be low in the short term because increased production is not something that can be accomplished immediately, especially since it will require increases in a set of complementary inputs and perhaps a willingness to alter production methods.

These findings have a number of implications for any subsequent USAID involvement in the rural roads sector in Bangladesh:

- baseline surveys should be conducted early during a project and should be designed so they can be used for subsequent evaluations and to assist in the choice of road segments to be included in the project;

- because production responses to lower transportation costs are unlikely to be immediate, evaluating the benefits of road projects should probably focus on road-use costs rather than production responses;
- evaluations of road-use benefits should not be limited to motorized vehicles;
- project benefits will be especially hard to identify if only small portions of road segments are improved and/or maintained; and
- any subsequent project should concentrate more on the benefits of road improvement and maintenance than appears to have been the case under FRMIP; this is likely to require a focus on feeder roads and only a few important connecting rural roads.

B. External Factors

Three major external factors influenced project success:

- implementation of the BDG decentralization policy (Local Government Ordinance of 1983) one year after the start of FRMIP. In effect, this created and strengthened the upazila role in infrastructure development and lessened the zila role, which greatly influenced project achievements due to the emphasis on development of district-level maintenance capacity in the project design;
- implementation of the Planning Commission's Rural Development Strategy for projects in 1984, which effectively established criteria by which district-level road networks (Types A and B) would be selected for improvement. The strategy did not address the issue of maintenance responsibility, except that this function would be the purview of local government; and
- heavy monsoon flooding in 1987 caused considerable road damage and required the central government to focus funding resources on road improvement at the expense of maintenance. Although FRMIP was in its close-out phase at this time, the flooding did delay the completion of carryover work from the project's 1986/1987 season.

These factors occurred at intervals throughout the life of the project and greatly affected the feasibility of attaining its principal objective. In many ways, the project purpose and

implementation planning in the original project paper (1981 to 1985) and extension amendment (1986 to 1990) were incompatible with the BDG policies discussed above. These policies are covered in more detail in the following section.

C. Institutional Considerations

Although technical, economic, and financial constraints are major obstacles to the development of road infrastructure in rural Bangladesh, institutional considerations relate to all these factors and, therefore, are of particular significance to this evaluation. The project purpose was to establish an "institutionalized" system of annual routine maintenance, but little analysis was undertaken during design or implementation to identify institutional constraints and devise ways of alleviating them. The need for a thorough understanding of institutional dynamics at the upazila level, where many important decisions concerning resource allocation and site selection for road maintenance and improvement are made, is now recognized as essential for improved project performance. This need was largely ignored during the first five years of FRMIP, as the project continued to rely on the more inactive district (zila) level of local government, despite the BDG decentralization policy.

Institutionalization of maintenance capacity at the local level was further undermined by the ad hoc nature of entities created to implement the project. At the national level, the PIO was set up following a ruling by the National Implementation Committee for Administrative Reform that, as a bureau, LGEB had no implementation authority. In fact, PIOs were established for a number of specific donor projects, and their temporary status was obviously not conducive to the achievement of permanent institutionalized capacity. DRDCs were also temporary ad hoc creations, whose role was limited to the implementation of FRMIP; therefore, they were ineffective as vehicles for institution-building.

The project's experience does not really provide a basis for assessing the most effective division of responsibilities between the two levels of local government. This is a much broader question that goes beyond road maintenance and improvement, extending to the whole range of public goods and services. FRMIP was undertaken during a period of important transformation in local government which is still occurring. Any project- or sector-specific division of responsibilities would likely prove ineffective at this time since general principles concerning the respective roles of zilas and upazilas have not yet been determined.

Aside from the issue of which level of local government should be responsible for specific activities on particular types of roads, a number of more general factors appear to be essential for institutionalization of maintenance capability in the public sector:

- a roadway classification and network system to facilitate maintenance planning;
- a maintenance policy promulgated by the central government along with an established allocative mechanism to provide some assurance to local governments that resources will be available for road maintenance on an annual basis;
- a mix of contract and force-account maintenance work, with the optimum balance depending on the composition of the annual maintenance program; and
- use of sound technical, financial, and economic criteria in programming annual maintenance and funding allocations.

D. Recurrent Costs

Recurrent-cost issues associated with FRMIP are somewhat illusory, given that little actual maintenance was carried out. It could be argued that maintenance was not performed because local jurisdictions had inadequate funding, but they did have some local resources which could have been used for maintenance. The fact that they did not do so could indicate there were other, higher-priority uses for available funds. Still, FRMIP never did an adequate job of "selling" the need for maintenance--to do so requires that a real payoff for maintenance be shown. However, that would likely require a longer-term, externally supported, maintenance effort. Furthermore, it would be important that such maintenance be done on roads that are yielding high benefits. Without some indication of relative benefits, it is not possible to consider the "optimal" balance between improvement and maintenance.

FRMIP's experience does not offer much conclusive evidence concerning optimal project financing arrangements. However, it does seem to suggest that any subsequent project give greater attention to institutional arrangements and the development of institutional capabilities to carry out maintenance. This could mean that USAID needs to provide relatively greater external support for maintenance and make continued funding contingent on the institution of maintenance programs.

The argument that maintenance should not proceed until road improvements are made assumes that no local roads in an upazila can actually be maintained economically. This is an empirical argument. A review of roads in an upazila could be done when a project is initiated. Any segments that are found to be maintainable and for which maintenance is anticipated to be an economically viable undertaking could immediately be included in a maintenance program. There is no reason to wait for improvements to be carried out on project roads. This might complicate end-of-project evaluations, but would allow the project to institute maintenance activities at the outset. This strategy would be adequate since the institutional developments necessary for maintenance will be complex and will certainly require time to become effective.

In conjunction with efforts to develop institutions that are capable of implementing a maintenance program, there should be a concerted effort on USAID's part to strengthen the abilities of local governments to finance maintenance. This will require policy initiatives at the highest levels, which will necessitate that USAID and other donors keep putting additional pressure on the BDG to make such policy changes.

E. Project Management and Monitoring

From the outset of this project, USAID management was confronted with a difficult situation regarding BDG policy- and decision-making. Long delays were encountered in meeting the conditions precedent, getting project equipment on-site, and signing a host-country technical assistance contract. Although the BDG was principally responsible for these actions, careful monitoring by USAID and the establishment of more effective working relationships with BDG implementing agencies might have resulted in more timely project start-up and the avoidance of major implementation problems.

The project paper noted a number of implementation problems that might develop in USAID's first effort to institutionalize maintenance programs at the local government (zila) level and provided a monitoring and evaluation plan to assist USAID in resolving such problems. However, the record shows that an adequate monitoring effort was not carried out and planned project evaluations were not undertaken.

Due to the apparent lack of regular visits to project field sites, USAID project management had little firsthand knowledge of the problems and conditions being encountered by the technical assistance team in field operations. More effective monitoring might have allowed the USAID project officer to mediate disagreements that occurred early on between the technical assistance team and MLG/WPW offices regarding how the project's

road maintenance model should develop and integrate with existing procedures and practices. Since interaction at the field level among USAID, the technical assistance contractor, and the BDG implementing agencies was very limited, fundamental problems of this sort were not dealt with. This situation served to reinforce and perpetuate the various groups' differing perceptions of the project's purpose.

The most critical shortcoming of USAID project management was the failure to perform any of the planned annual evaluations in the project's early years. It was only with the project's first audit in September 1986--five years after signing of the grant agreement--that USAID management was confronted with the magnitude and extent of problems facing the project. The audit report concluded that after five years and U.S.\$7.8 million in AID expenditures, few measurable accomplishments had been made toward the project's objective of institutionalizing an effective program of routine annual maintenance and road development or toward the goal of increased agricultural production.

The audit also pointed out that several important components essential to project success were not in place. Of particular importance was the development of criteria for prioritizing road maintenance and improvement activities. The auditors attributed these deficiencies to USAID's lack of established policies and effective procedures to ensure that BDG complied with project covenants and undertook other critical project components. These observations and the apparent absence of information on the BDG's financial contribution to the project are further indications of inadequate monitoring by USAID management.

The first field evaluation report on the project was completed by USAID in July 1987. This Rapid Rural Appraisal found that "while significant progress was made in accelerating the pace of road improvements, little or no discernible progress has been made in institutionalizing any kind of routine annual maintenance program." The lack of progress toward achieving the project purpose was attributed to a number of factors:

- a lack of consensus on and commitment to feeder road maintenance by central- and district-level officials;
- major changes in local government, prompted by the BDG's decentralization policy;
- the dominant role played by the central-level Planning Commission in road selection, which precluded the strong local government participation in decision making needed to foster a greater commitment to maintenance; and

- absence of a strategy for addressing recurrent-cost constraints and linking investment decisions to maintenance financing.

The Rapid Rural Appraisal was a major turning point and set the stage for the eventual decision to terminate the project. Subsequently, USAID management focused on project close-out activities and initiated studies in preparation for the design of a new project on infrastructure development at the local government level.

BDG project management was equally problematic. Under WPW, the ZRMIP's engineering advisor had multiple responsibilities for a number of donor projects and, therefore, was unable to focus sufficient attention on the USAID project. Under the FRMIP extension (August 1986), the BDG decided to shift implementation responsibilities to the PIO and project director within the MLG. The PIO was now responsible for providing project coordination at central government level among MLG, USAID, and LGEB field engineers and assisting in resolving implementation problems. This management framework was imposed by the BDG Cabinet Division, an entity external to the MLG because it wanted to support the decentralization policy and not contribute to the growth of strong central line institutions (LGEB). The Cabinet Division also claimed that only Departments, Ministries, and local governments have the right to implement projects and not Bureaus such as LGEB, thereby justifying the shift in responsibility to the MLG PIO. Therefore, it is not surprising that despite the establishment of the PIO, the office of the LGEB engineering advisor still played a commanding role in project management.

In addition, Amendment No. 3 provided for the creation of District Road Development Committees. This was a compromise arrangement between USAID and the BDG as a result of USAID's unwillingness to redesign the project in line with the BDG decentralization policy (i.e., to have upazilas in charge of project implementation in lieu of the districts). Since district governments were technically "suspended" at the time and could not implement projects, the BDG proposed the establishment of the DRDCs under the jurisdiction of the Deputy Commissioner to provide the legal basis for issuing contracts at the local level. The amendment also required that the BDG assign an executive engineer (XEN) and two sub-assistant engineers (SAEs) to each district, with one SAE devoted exclusively to feeder road maintenance activities.

These externally induced, ad hoc arrangements proved inadequate and, in the final analysis, did not achieve the desired end. From this experience, it is reasonable to question the efficacy of efforts to improve overall systems for the

delivery of public services through project-specific institutional arrangements.

Problems with implementation and consensus on the project purpose were exacerbated by a lack of regular field visits by the PIO, especially in conjunction with USAID management. Since establishing a maintenance program at the district level depended greatly on the support of the PIO in the field, it is not surprising that so little progress was made in this regard. In effect, the LGEB engineering advisor had considerable control over XEN actions and decisions regarding FRMIP activities, but limited time to devote to management issues and even less possibility of participating in joint field visits with USAID and the PIO.

F. Road Maintenance and Improvement

Due to the notable lack of progress in road maintenance, the road development fund (U.S.\$8.5 million and Taka 87.8 million) became the focus of on-site project activity. USAID recognized that road conditions in rural areas were in such a deteriorated state that reconstruction would have a high priority and might be required prior to establishing cost-effective maintenance. Road improvement work was timely and produced the few identifiable indicators of project progress. The technical assistance contractor was able to demonstrate the value of using the contracting procedures and construction practices they had developed. The contractor also provided major support to USAID in the inspection and certification of project-funded improvement work.

Significant achievements in road improvement were realized under FRMIP. In fact, the planned target of improving 110 km of deteriorated portions of the feeder road network by the end of the project (June 1990) was surpassed, and from November 1983 to September 1987, a total of 123 km of FRB were partially or completely improved. Of this total, 83 km were paved to bituminous-carpet standards and 40 km were partially improved. The improvement of 83 km is 31 percent of the FRB bituminous-carpet network in the three old districts. The 123 km represents 3.2 percent of the total Feeder Road A (FRA) and FRB network which consists of bituminous carpet, herring-bone brick (HBB), water-bound macadam (WBM), and earth of 3,810 km in the three old districts. (See Appendix C for FRMIP road maintenance and improvement statistics.)

During the project's transitional period of 20 months prior to termination, an additional 43 km of road improvement was done in the three greater district areas. However, it should be noted that USAID did impose conditions on road improvements during the project's close-out phase--one being that funding for bituminous-carpet road improvement would be discontinued. This condition

was specified as a result of the observation that little or no maintenance was being done on previously built bituminous-carpeted roads (not project-related) in the three greater districts. This lack of maintenance resulted in numerous cases of roads becoming too deteriorated and "pot-holed" to permit normal traffic flow of rickshaws and other wheeled vehicles.

Project-funded road improvement and maintenance schemes were inspected and certified by the technical assistance contractor as meeting quality standards specified in the contract. The resulting roadways and structures are thought to be of relatively high quality when compared with roadways and structures solely supervised by the LGEB. Consequently, there is no evidence that the limited success in improving road improvement methods has made an impact on LGEB's practices.

A number of improvement schemes inspected in the six districts visited during this evaluation showed high-quality bridge and culvert structure work, especially for reinforced concrete. This is a good indication of sound construction practices that can be directly attributed to quality-control procedures instituted by the technical assistance contractor. Road improvement work appeared to be of durable and lasting quality. However, as noted in project files, there were also cases as late as December 1988 where the technical assistance contractor continued to have major problems approving work by local contractors due to low quality. As is true in construction work around the world, the quality of work and adoption of good construction practices by contractors has a lot to do with contractor attitude, acceptable local practices, and the quality and level of inspection applied to the work.

The important question of FRMIP's impact on quality standards for road improvement and maintenance is difficult to answer. Training provided under the project and the dissemination of technical manuals can certainly have a lasting impact on the direct beneficiaries. However, technical manuals prepared by WSA have not been officially adopted in full or in part by LGEB. The application of technical standards on a continuing basis is greatly dependent on the level of quality the government is willing to pay for and to what extent local engineers are motivated to enforce quality requirements.

The project design called for organization and management of maintenance programs in 13 of the 14 target districts, with each district maintaining 20 miles (32 km) of feeder roads each year. The Road Maintenance Fund (U.S.\$1.144 million and Taka 67.8 million) was set up for this purpose. As noted previously, no institutionalized maintenance program or organization has been established in any of the target districts. Project-funded road maintenance programs were carried out as road segment schemes, with no indication that annual routine maintenance would be

performed on previously maintained segments of FRB roads at the district or subdistrict level.

This is not to say that no maintenance work was undertaken by the project. During the first four years of implementation, a total of 147 km of FRB was maintained (different segments each season) in the three old districts, which represents four percent of the total 3,810 km network, and from September 1987 to May 1989, 47 km of maintenance work was done in the three greater district areas.

Other planned outputs in support of road maintenance and improvement were the production and dissemination of technical manuals. With the assistance of the technical assistance contractor, the project prepared technical manuals that exceeded target expectations in quantity and quality. Some of the key project manuals prepared and disseminated to various offices in the districts and upazilas were

- Road Maintenance Manual,
- Road Construction Manual,
- Standard Specifications for Road Construction,
- Standard Methods of Mechanical Analysis of Soils,
- Training Program, and
- Pilot Road Maintenance Program Manual.

G. Road Selection Process

A key element of the project's institution-building objectives was development of a planning process at the district level for the selection of roads for maintenance and improvement. The responsibility for coordinating road improvement activities, controlling resource allocation, contracting, and supervising was given to the PIO and DRDCs under the terms of grant agreement Amendment No. 3. The BDG project pro forma, which was prepared in conjunction with Amendment No. 3, and the project extension reflected the central-level Planning Commission's Rural Development Strategy. This strategy was developed around the concept of growth centers, where the majority of rural-sector investments would be concentrated. To ensure proper implementation of its policy, the Planning Commission required that the pro forma for FRMIP list specific roads to be improved.

The validity of the growth-center concept and economic justification for specific road selections will not be considered here. What is most significant for this evaluation is the

apparent contradiction between FRMIP's objectives to institutionalize maintenance at the local level and a central government strategy that precludes investment site selection by the local entities who are responsible for investment maintenance. Local time and place information are essential to the prioritization of investment decisions. Even within the general strategy to link growth centers, most specific cases offer a number of choices regarding precise site selection for road work. Those choices are best made at the local level where knowledge of road conditions and use will lead to more informed decisions. The likelihood that maintenance will be performed also increases when site selection is done at the local level.

The preselection of roads for improvement under the Planning Commission's strategy is also inconsistent with the BDG decentralization policy, under which local governments (upazilas) are given primary responsibility for infrastructure development. The Rural Development Strategy focuses exclusively on new investments and gives little attention to maintenance, while the decentralization policy clearly assigns the responsibility for maintenance to upazilas. The majority of financing for rural road schemes comes from external donors. This obviously reinforces the tendency toward central decision making evidenced in the Rural Development Strategy and further decreases the likelihood that local governments will allocate resources to the maintenance of these investments (Carduner 1989).

For the most part, FRMIP investments were made in the context of this ambiguity and the project's efforts to begin pilot maintenance programs were not successful under these conditions. As a result, no real model for site selection for road improvement and maintenance was ever established or tested under the project. Consequently, it is extremely difficult to make any recommendation in this regard based on project experience. However, based on general principles, it is clear that road investment decisions should apply some criteria that focus on economic returns of the specific road segment and, in most instances, be made at the local level to favor subsequent resource allocation for maintenance.

H. Road Equipment

The acquisition, use, and maintenance of project-funded equipment was one of the most problematic components of the project. Following an initial study by the technical assistance contractor in early 1983, a recommended list of equipment was drawn up for procurement. However, the study overlooked a critical factor: there were no equipment maintenance facilities in the project area to provide on-site maintenance and repair to the more complex pieces of equipment (trucks and rollers).

The equipment list was submitted to LGEB, but did not receive final approval until 1985--two years after the needs study was completed. Initial delays were caused mainly by differences of opinion between WSA and LGEB on equipment type and specifications. Further delays occurred while USAID and LGEB sorted out procurement regulations acceptable to both governments, and it was not until mid-1986 that U.S. equipment finally arrived on-site--four and a half years after the project started.

Following delivery of the equipment, a number of problems became apparent:

- no spare parts needed to perform the most basic equipment maintenance were included in the original order (they were purchased later under separate tender);
- trucks were oversized for their intended use;
- certain equipment did not fit with local contractors' practices (tar boilers); and
- the three recipient districts of project equipment (Sylhet, Rangpur, and Faridpur) did not have the mechanical experience, spare parts, and lubricants to adequately maintain the equipment.

To partially alleviate these problems and ensure equipment operation and maintenance, the technical assistance contractor was asked to provide an equipment specialist on-site. When the equipment specialist arrived in 1987, his first job was to order additional spare parts.

In general, the U.S. equipment, consisting mainly of heavy-duty trucks and rollers, was used to good advantage. However, the trucks proved to be too large for efficient road maintenance on the FRB system, and the two-wheel rollers, which are equipped with hydraulic systems and hydrostatic drive, are overly sophisticated for local conditions and will be extremely difficult to maintain and repair over time. It should also be noted that the rollers must be "walked" from one job to the next. With the departure of the equipment specialist in May 1989, maintenance problems are expected to result in increased equipment downtime.

Other equipment purchased from the United States included construction materials and laboratory testing equipment. This equipment was effectively utilized and is located at the three old district headquarters of Sylhet, Rangpur, and Faridpur. The laboratory equipment appears to be well-maintained, and testing is carried out by project-trained LGEB staff.

Concurrent with purchase of the U.S. equipment, local off-the-shelf purchase was made of nine heavy-duty water trailers and 12 tar boilers. This equipment is located in the same three district headquarters. During the evaluation, this equipment was inspected. It was found that none of the water trailers have been used since they require a prime-mover to tow them from site to site and the districts do not have prime-movers. The water trailers were procured to provide water for compaction work, but this use is highly improbable. Very little use has been made of the tar boilers purchased with project funds. Locally fabricated boilers are not accepted by local contractors for road improvement or maintenance work because they are heavy, bulky, and require considerable effort to move from point to point. Contractors prefer to use half-barrels for heating asphalt.

The project also funded off-the-shelf purchase of Japanese motorcycles and four-wheel drive vehicles for LGEB staff. They have been used extensively, but proper maintenance of this equipment has been a continual problem.

An equipment utilization study was done by the technical assistance contractor in 1988 which showed, among other things, that utilization rates for all road equipment in the project districts, including FRMIP equipment, was less than 20 percent of the rated life-use. The findings also indicated that simple maintenance was not being performed and a lack of spare parts was a major problem. The study concluded that aside from the motorcycles and vehicles needed by LGEB staff to monitor road work in the district and engineering and testing equipment for quality control, the project should not make subsequent investments in construction equipment for road improvement and maintenance.

I. Technical Assistance

Due to early project implementation problems between USAID and the BDG, the technical assistance team did not arrive on-site until 15 months after signing of the grant agreement. In general, the technical assistance provided under the project was adequate in quantity and quality. However, staff placement and contractual problems of one kind or another persisted, especially during the first three years of project life.

Following their initial 1982 terms of reference, the technical assistance team attempted to create a structure in each project district modeled on a U.S. county highway maintenance organization. Some of their initial outputs were

- development of a district road inventory,
- preparation of technical manuals,

- initiation of technical training, and
- initiation of construction quality-control procedures.

Unfortunately, negative aspects of this approach also surfaced, such as the following:

- the conflicts that arose between the XEN office and resident technical assistance engineers over the application of technical procedures and attempts to change established technical practices;
- the technical assistance contractor's attempt to create a maintenance organization which was fundamentally incompatible with existing public-sector operational procedures and resources; and
- the lack of integration between technical assistance staff operations and the district XEN office and its operations.

With the end of the project approaching in 1985 and the decision made by USAID and BDG to extend the project, numerous problems developed around extension of the technical assistance host-country contract. In October 1987, a direct AID contract was signed with WSA, under which technical assistance continued with reduced staffing for the project's remaining 21 months (October 1987 to June 1989). The reduced team consisted of an expatriate engineer as chief of party (COP), an equipment specialist from WSA, and an assistant resident engineer (ARE) from BCL in each of the three old districts. The ARE's primary responsibility was to inspect and report on the quality and completion of project-financed road work, while the COP handled final approval for payment of all project-funded contract work.

With extension of the project in 1986, followed by the reduction in technical assistance expatriate staffing, the technical assistance team had a more narrow role to play within the project's scope. Consequently, during FRMIP's last three years, the technical assistance team focused mainly on

- inspecting and certifying project-funded construction work, which was required for USAID reimbursement of the BDG (this fulfilled USAID requirements for accountability on project disbursements);
- conducting USAID-initiated studies for use in project redesign;

- continued training of LGEB local government staff; and
- supporting equipment maintenance and repair for district use on road improvement schemes. (The equipment specialist did an excellent job of setting up a warehouse, storage control, and codex system for spare parts and testing equipment purchased by the project.)

Overall, positive effects of technical assistance services under the project can be noted in the following areas:

- successful in-country and third-country training, which provided an element of technical transfer with a lasting impact;
- introduction of improved contracting procedures and construction inspection practices, with subsequent improvement in the quality of work which produced a short-term impact, although no indicators show that these practices will be carried on past termination of the project;
- development and dissemination of technical manuals on road maintenance, construction work, specifications, equipment maintenance, and testing procedures which produced a favorable impact. (The manuals are used by some LGEB staff as technical reference materials, but have not been formally incorporated into existing LGEB procedures); and
- completion of a number of project-funded studies, including the road inventory study of the three project districts of Sylhet, Faridpur, and Rangpur; the report on economic feasibility assessment of project-improved roads; and the report on priority ranking of FRBs in the three project districts.

Despite these achievements, the project's failure to make significant progress toward its stated purpose can be attributed partly to inadequacies in the technical assistance reporting format. The technical assistance contractor provided monthly reports to USAID and the BDG for the duration of the contract, but these appear to have had little impact on USAID and BDG project management as far as defining problem areas, recommending solutions, and enhancing project management decisions. A review of a number of these monthly reports showed them to be unwieldy and of limited practical value for management decisions.

J. Training

Training was decidedly one of the project's more successful components. With a planned target of 200 LGEB staff trained in road maintenance and improvement techniques, training courses and participants far exceeded these outputs. From 1983 to 1988, over 429 LGEB staff received training. This included three sessions covering road maintenance and improvement techniques, given in 1983, 1984, and 1988 to 353 trainees. This in-country training was initiated early, had appropriate content, and made a positive impact on trainees. Training cycles and on-the-job training were completed as planned, and U.S. and third-country training was successfully carried out despite some administrative problems and delays. The project's failure to institutionalize a maintenance program does not negate this impact, nor is the training lost as the individual LGEB staff members trained will have further opportunities to apply these skills on future road improvement and maintenance work.

The report entitled, Evaluation of Training Component (July 1988), pointed out that the technical assistance contractor did a reasonably good job of meeting contractual training requirements in terms of the participation of concerned local government staff, but some shortcomings were noted:

- course materials were not prepared in Bangali,
- on-the-job training was not fully organized, and
- no refresher training was provided.

The link between training and on-the-job application was weak--only a few trainees could show specific applications of training received. This weakness can be attributed to the project's inability to institutionalize maintenance programs or initiate pilot maintenance activities. Furthermore, use of project-prepared manuals and reports following termination of the project in July 1989 is expected to be marginal as LGEB staff are using their own manuals for contract work and, to date, have not incorporated the contents of the manuals prepared under FRMIP.

Other specific problems related to the project's training component are as follows. First, the numerous and lengthy delays experienced in implementing third-country training in Thailand appear to have been the result of poor project management. The loss of a training cycle because of a misunderstanding about "who" pays for international travel was not warranted.

Second, the training/observational tour in the United States for selected LGEB staff was well-intended and provided a means to broaden the participants' perspective on road maintenance practices and technology as applied in the United States.

However, the actual technology transfer resulting from exposure to maintenance systems in a country such as the United States is doubtful and highly dependent on the job position and influence of the participants. The selection of participants for short-term observational training should have been based on their status and ability to introduce new practices and procedures into government programs.

Third, the LGEB training unit was started in October 1984 with assistance from another donor, about one year after the major thrust of the project's training program had been developed and training cycles begun. Although the technical assistance training advisor worked with and helped organize the unit, project training activities continued independent of the fledgling LGEB unit. A higher level of integration between project training and the LGEB unit might have contributed to its institutional development and a more sustainable impact.

K. Socioeconomic Impact

No systematic study of project benefits has been undertaken. The socioeconomic baseline study funded under the project (initiated in 1985/1986) has not proven usable for follow-on measurements that could have provided data on socioeconomic impact. Therefore, the impressions presented in this section are based on the assumption that the kinds of results studies have found for other feeder and rural road projects may also hold true for FRMIP.

It is reasonable to assume that project investments would have positive impacts on individuals who might benefit from

- increased access to markets for agricultural products,
- increased access to agricultural inputs, and
- increased access to health and family-planning information and services.

Whether these benefits accrue proportionately (if at all) to large and small farmers or rich and poor families cannot be fully determined and probably varies with the benefit. In any case, the breadth and longevity of benefits should not be overestimated, as FRMIP road segments represent a very small proportion of the total feeder road network--less than five percent of the total FRA and FRB network. Furthermore, road selection was not firmly based on an assessment of the economic potential of the roads in question, and the fact that regular maintenance of improved roads has not occurred may negate any benefits which may have otherwise accrued.

V. RECOMMENDATIONS AND LESSONS LEARNED

In light of the inconclusive evidence on the road investment returns (particularly road maintenance) in Bangladesh, it is highly desirable that future undertakings in the road sector involve systematic data collection and experimentation in maintenance. More specifically, it is recommended that

- baseline surveys be conducted early during a project that are designed for use in subsequent evaluations and to assist in choosing road segments during project implementation. With an established set of criteria, a decision model should provide the basis for a priority ranking of possible investment choices, and these investment decisions should apply some criteria which focus on economic returns of the specific road segment and be made at the local level--in most instances--to favor subsequent resource allocation to maintenance; and
- since production responses to lower transportation costs are unlikely to be immediate, evaluation of the benefits of road projects should probably focus on road-use costs rather than production responses. Evaluations of road-use benefits should be made on segments large enough to capture most of the additional traffic resulting from the investments and take into account all forms of transportation.

The BDG's decentralization policy and the Planning Commission's Rural Development Strategy were largely inconsistent with FRMIP's objectives and implementation strategy. Therefore, for new projects, it is recommended that the host government's policy environment be closely monitored to identify any policy changes that could have a potential impact on project outcomes. If it is found that policy changes have possible negative implications for project implementation or the attainment of objectives, negotiations with the host government should be undertaken to make necessary adjustments to the project or modify the policy in question.

FRMIP's experience with the LGEB's PIO and DRDCs suggests that institution-building or institutionalization objectives should not be sought through the creation of ad hoc, project-created and -sponsored entities. A thorough understanding of the requirements for long-term institutional arrangements to achieve the project's purpose should be pursued and support given to those institutions through project resources.

Relative to the project's failure to institutionalize a capacity to carry out routine maintenance of feeder roads at the district level, this evaluation's findings reveal two key factors that may produce more positive outcomes in future endeavors of this type:

- any subsequent project should give greater attention to institutional arrangements, and the development of institutional capabilities to carry out maintenance should be accompanied by greater external support, specifically targeted for maintenance activities. Funding should be contingent on the institution of maintenance programs; and
- to increase the likelihood that maintenance activities will continue after external support is terminated, concerted efforts should be made to strengthen the abilities of local governments to finance maintenance. This will require policy initiatives at the highest levels and will necessitate that all donors active in the roads sector work with the BDG in support of such policy changes.

Several additional technical elements are recommended to improve efforts in the area of road maintenance:

- a roadway classification and network system to facilitate maintenance planning;
- a mix of contract and force-account maintenance work; and
- the use of sound technical, financial, and economic criteria in programming annual maintenance activities.

Unfortunately, the problems noted in the area of equipment procurement under FRMIP are quite common in externally funded development projects. Under existing conditions found in rural Bangladesh, it is recommended that great attention be given to the suitability of project-financed equipment and procurement be made only when an adequate maintenance capability is demonstrated and spare parts availability is assured.

Training is a necessary part of any technical assistance project. The training programs under FRMIP and the materials produced by the technical assistance contractor were of good quality. However, these activities were carried out in relative isolation from the project's major objectives, and little direct

application of imparted skills by trainees has been evident. The experience under FRMIP provides two important lessons:

- the need exists to establish well-defined training objectives and foster a clear understanding among project managers, trainers, and trainees of how these objectives relate to the project's overall objectives; and
- training programs require careful monitoring to assure that objectives are being met and that there are proper incentives which are conducive to the application of newly acquired knowledge and skills.

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APPENDIX A
Persons Contacted

Ministry of Local Government

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APPENDIX B

Scope of Work

EVALUATION OF THE BANGLADESH FEEDER ROADS MAINTENANCE AND IMPROVEMENT PROJECT

I. Purpose of Evaluation

USAID/Dhaka has been supporting road maintenance and improvement since 1981, most recently through the Feeder Roads Maintenance and Improvement Project (FRMIP). In consultation with the Bangladesh Government (BDG), the Mission has decided to phase out this project. Numerous problems, including fundamentally different USAID and Bangladesh Government perceptions of the project purpose, dictated the need to terminate the project early. Project activities will cease on or about May 31, 1989, about a year before the scheduled Project Assistance Completion Date (PACD) of June 30, 1990.

The BDG plans to continue funding road maintenance and improvement under its Rural Development Project No. 3: Infrastructure, Old Sylhet District, which has been receiving core financing from the FRMIP. As a result of the Mission decision to terminate the FRMIP, USAID dollar funding of the BDG Rural Development Project No. 3 has been curtailed drastically and will end entirely by May 31, 1989. However, the Mission plans to support the Rural Development Project No. 3 in BDG FY 1988/1989 and 1989/1990 through another mechanism--PL-480 Title III local currency funding for bridge and culvert construction on Type B feeder roads in areas formerly covered by the FRMIP project.

USAID recognizes the importance of the transport sector to Bangladesh's development, and is developing a new Local Government Infrastructure Services (LGIS) Project which will focus on sustainable road and infrastructure development while tracking the broader problem of strengthening local governments to carry out rural development work.

The LGIS design will rely heavily on the insights resulting from this joint FRMIP evaluation to capitalize on and replicate FRMIP successes and to avoid and preempt problem areas. This evaluation also will serve as a case study for a comprehensive nationwide "Rural and Feeder Roads Sector Assessment" to be carried out in early 1989. This assessment will provide information, analysis, and strategies for donors and the government to make use of in this sector, for which total investments could amount to \$400 million during the next 10 years.

II. Background

A. Zila Roads Maintenance and Improvement Project

The FRMIP was previously called the Zila Roads Maintenance and Improvement Project. It was authorized in August 1981 with an initial PACD of December 1, 1984, and \$9.2 million life-of-project funding.

The project was to be the first effort in Bangladesh to develop and institutionalize a routine preventive maintenance program for farm-to-market roads under the jurisdiction of local, district-level councils (zila parishads). The project goal was to increase agricultural production through improved and better maintained farm-to-market roads. The project purpose was to improve rural access by institutionalizing maintenance of these roads at the zila parishad level of local government and increasing the pace of road development. The project cited the importance of road maintenance in light of Bangladesh's deltaic plain topography, intense annual monsoons, and limited resources available for road improvement. An effective maintenance program was seen as critical to insuring that completed road improvements (both upgrading and new construction) did not quickly deteriorate.

Three zila parishads were to participate: Faridpur (central Bangladesh), Rangpur (northwest), and Sylhet (northeast). Project technical assistance was to test and evaluate maintenance technologies and organizational structures. By the final year of the project, an appropriate maintenance system was to be in place in the three project districts, and personnel were to be equipped and fully trained in proper maintenance management.

B. Feeder Roads maintenance and Improvement Project

A Project Paper Supplement amending the original Zila Roads Maintenance and Improvement Project was approved in May 1986. It extended the life-of-project to June 1990 and added \$12.5 million, for a total life-of-project funding of \$21.7 million. The BDG contribution was revised to \$5.77 million from \$4.6 million.

The Supplement also changed the name of the project to Feeder Roads Maintenance and Improvement. The name change was partly in response to a new BDG Rural Development Strategy which prescribes paving 4,000 miles of feeder roads within the next ten years, and partly in response to a BDG policy to decentralize government functions, primarily by strengthening government at the sub-district (upazila) level, thus shifting the focus of public administration from districts (zilas) to upazilas.

Despite the name change and the government's decentralization efforts, the FRMIP Project Paper Supplement recognized that upazilas were not immediately capable of assuming the task of improving and maintaining feeder roads on the scale indicated by the Rural Development Strategy. Therefore, FRMIP implementation responsibilities were to remain at the district level, steered by a District Road Development Committee (DRDC). The Deputy Commissioner (administrative head of a district) was to chair the committee, and upazila parishad chairmen from all the upazilas in the district were to be involved in planning. Technical matters were to be handled by a newly established Local Government Engineering Bureau (LGEB) within the Ministry of Local Government (MLG).

The Project Paper Supplement cited various problems to justify amending and extending the project. It noted that original project benchmarks were unrealistic and the time allotted to complete certain tasks was too short. In addition, they had erroneously assumed that the construction aspect of the program would run smoothly due to road construction experience of contractors working in the rural sector.

C. Current Situation

In March 1988, after a negative audit and an unfavorable Mission Rapid Rural Appraisal of FRMIP implementation, USAID decided to terminate the FRMIP Grant Agreement and design a new project. At present, it appears that an orderly phaseout of the FRMIP may take until early June 1989. Remaining FRMIP project funds of about one million dollars are expected to be de-obligated.

The Mission intends that the new LGIS project design will be completed in 1989. It will support BDG efforts to decentralize local government administration. The new project will seek to alleviate key constraints to sustainable infrastructure development by strengthening local institutions and by improving local government planning and project execution, recurrent cost management, revenue generation, and local accountability.

III. Evaluation Questions

As the final evaluation of the FRMIP, this evaluation must assess to what degree the end of the project status indicators were realized and the project purpose attained. It also must delineate the differing positions of the implementing agencies regarding why the project has reached an impasse and offer its own explanation for the impasse.

In addition, to be useful for LGIC design and to serve as a starting point and case study for the Sector A assessment, the evaluation must furnish a comprehensive, detailed discussion of

lessons learned during the FRMIP implementation. Further, it must identify and describe both the areas of agreement and disagreement between the Mission and the BDG and define the common ground that offers the greatest promise for proceeding with constructive rural infrastructure-related activity in the future.

The following list of Evaluation Questions are proposed as points of departure, and each should be discussed in the final evaluation report with varying degrees of rigor, depending on its importance and complexity. During its first week in country, the team will meet with each member of the Joint Committee to solicit additional questions and concerns the members may have. Prior to initiating fieldwork, the team will formulate a final list of key questions based on those set forth below and those raised in its discussions with committee members; it will present these key questions, ranked according to priority, to the Joint Committee for its comments. Thereafter, the majority of the team's time will be spent conceiving and drafting findings, conclusions, and recommendations for the key questions. It is evident that institutional, recurrent cost, and management considerations, and the matter of project assumptions presented below are key questions. The team may wish to redraft and expand upon the language below, but these four subjects clearly merit in-depth analysis.

A. Institutional Considerations

Institutional considerations pervade inquiry of most of the following areas and should be addressed specifically in relation to each as appropriate.

- 1) How have the present institutional arrangements affected road improvement and maintenance under the project? In what ways have they hindered and supported introduction of more effective arrangements?
- 2) What factors as indicated by project experience are necessary to institutionalize effective maintenance capability?
 - a) What organizational and personnel structure is most effective for an institutionalized feeder road maintenance program, and how can it be introduced with minimum disruption?
 - b) What institutional and individual incentives are most effective for an institutionalized feeder road maintenance program, and how can they be introduced with least disruption?

c) At what level(s) of government should feeder road maintenance responsibility be located? If maintenance responsibility is divided among administrative levels, what is the most effective allocation of responsibilities? How can the optimal allocation of responsibilities be brought about?

B. Recurrent Cost Considerations

- 1) Were BDG and local government contributions under the project adequate? If not, what factors discouraged adequate contributions and what can be done to alleviate these factors in the future?
- 2) What has been the impact of the road improvement component on recurrent costs for road maintenance?
- 3) What does project experience indicate is the optimal financial balance between feeder road improvement and maintenance, and how can it be introduced?
- 4) What does the FRMIP experience indicate to be the optimal project financial arrangements among the BDG, local governments, and USAID for future road development work during new projects to ensure adequate, sustained financial support for road maintenance upon project termination?
- 5) What does project experience indicate are the most appropriate methods of recurrent cost financing for use in maintaining feeder and other rural access roads, given the peculiarities of the Bangladesh context, and how can they be introduced?

C. Project Monitoring/Management

- 1) Assess overall project monitoring and management with specific reference to USAID, the central Bangladesh Government entities involved (especially the Project Implementation Office), the participating district and upazila-level entities, and the contractor. With what efficiency and effectiveness were inputs transformed to outputs and outputs to purpose? If there were bottlenecks, where and why?
- 2) How did differing perceptions of the project purpose by the BDG and USAID develop, and how did the difference affect project implementation (e.g., BDG emphasized the road improvement aspects of the project, while USAID stressed institutionalization of road maintenance capability)? How could the

different perceptions have been made known earlier and how could they have been reconciled? Were communication channels blocked? Were monitoring and reporting inadequate or inappropriate?

- 3) What steps should project designers take to ensure that divergent perceptions of a project's purpose and priorities do not develop to hamper future road development projects?

D. Key Project Assumptions

- 1) How did project assumptions affect project implementation (e.g., the Project Paper assumption that zila parishads would continue to function)? What strategies were adopted in light of changed assumptions? Were they effective?
- 2) How can project designers plan for changes in key assumptions?
- 3) What assumptions are likely to be critical to a future project's success?

E. Road Maintenance and Improvement

- 1) Do current BDG feeder road maintenance and improvement practices demonstrate improved quality and efficiency as a result of the project?
- 2) What has been the pace and quality of road improvement work and road maintenance work under the project?

F. Road Selection Process

- 1) How well has the road selection process worked? What links can be observed between the road selection process and road maintenance under the project?
- 2) Are there other road selection methodologies likely to be more effective in assuring technical and economic feasibility of selected roads? What are they? Should they be introduced? If so, how?
- 3) Would other road selection methodologies be more conducive to sustained routine road maintenance? Should they be introduced? If so, how?

G. Road Equipment (TA)

Assess the effectiveness of selection, use, and maintenance of road equipment under the project.

H. Technical Assistance

- 1) What has been the overall effectiveness of TA under the project?
- 2) How might the TA effort have been altered (team size and composition, timing, etc.) for more effective achievement of the project purpose?
- 3) Under the project, were contractor and BDG counterpart personnel at various levels appropriately assigned to tasks matching their abilities and were they appropriately trained?

I. Training

- 1) Was project-financed training appropriate to furthering the project purpose (training in appropriate subjects, at appropriate places, given by qualified, suitable instructors, using an appropriate mix of on-the-job training, in-country workshops and seminars, and third-country and U.S. training)?
- 2) If training was appropriate to achieving the project purpose, did it in fact contribute to purpose achievement? Are trainees using the training (how, why, or why not)?
- 3) Was the training cost-effective?
- 4) What does the FRMIP experience indicate will be the most urgent training needs and the optimal methods for satisfying them in the LGIS project?

J. Socioeconomic Considerations

What socioeconomic benefits (e.g., income, prices, employment) can be shown as a result of roads that were improved or maintained under the project? What are the associated costs and the implications for cost-effectiveness?

IV. Methodology

In conceiving and drafting its findings, conclusions, and recommendations on the key questions and other evaluation issues,

the team will make clear: 1) what information it has learned, with specific discussion of the limits of what it knows; 2) what conclusions it can draw; 3) with what level of confidence it proffers its conclusions; and 4) what recommended course(s) of action and policies it proposes for the Mission and the BDG in light of its findings and conclusions. In gathering and analyzing information, the team will consult the sources and, unless agreed to otherwise, adhere to the procedures set forth below in this section.

The evaluation team will meet with BDG Ministry of Local Government officials, USAID, consultants and contractors, and local government officials in the project districts. All team members will spend between one and three weeks (6 to 18 working days) at field sites outside Dhaka. This fieldwork will consist of visits to project sites, visits to a representative number of upazilas (including some outside the project area), and zilas.

Key project documents that the team must review include, but are not limited to the following:

- AID Project Paper and Grant Agreement, Zila Roads Maintenance and Improvement Project, June 1981.
- BDG Project Pro forma for the Zila Roads Maintenance and Improvement Project, 1981.
- BDG Project Pro forma for the Rural Development Project 3: Infrastructure, Old Sylhet District (Feeder Road Maintenance and Improvement Project) (1986-87 to 1989-90).
- Audit of Feeder Roads Maintenance and Improvement Project, AID Inspector General, December 1986.
- USAID materials relating to closing the audit recommendations.
- Rapid Rural Appraisal of the Feeder Roads Maintenance and Improvement Project, USAID/Dhaka, July 1987.
- Local Government Division Letter No. S-IV/2R-2/86/279 of September 14, 1987, responding to the Rapid Rural Appraisal.
- Studies by Wilbur Smith & Associates (the TA contractor) on: economic feasibility and costs and benefits of feeder road improvements, recurrent cost financing for feeder road maintenance, existing road equipment, and evaluation of past training programs.

- Syracuse University Studies on Local Revenue Mobilization.
- "Decentralization and Development in Bangladesh," Harry Blair, Bucknell University, March 1987.
- "Decentralization and Possibilities for USAID Assistance in Bangladesh," Harry Blair, November 1987.

The following program is suggested for the team's in-country time, assuming an eight-week duration:

- 4 days - Orientation in Dhaka, reading, meeting with the Joint Committee to develop list of key questions
- 18 days - Gathering data in upazilas and districts
- 3 days - Preparation and presentation of preliminary findings and conclusions, relating to the key questions developed with the Joint Committee
- 5 days - Gathering additional data and testing conclusions in Dhaka
- 5 days - Preparation and distribution of draft report
- 10 days - Discussion of draft report with Joint Committee members making field visits to fine-tune recommendations, finalizing report
- 2 days - Preparing and presenting final debriefing to Joint Committee

48 days

Team members will work no less than eight hours a day, six days a week.

V. Team Composition

The evaluation team will be made up of four expatriates and two Bangladeshis who will work eight weeks in country. Expatriate team members will include a team leader, an institutional analyst, an engineer, and an economist public finance specialist. Bangladeshi team members will include an administrative assistant and a senior research specialist.

VI. Logistics and Administration

The FRMIP contractor, Wilbur Smith & Associates (WSA), is responsible for the team's in-country vehicular logistical support. WSA is responsible for furnishing the team's office space, computer facilities, secretarial services, and duplication facilities. The team should be advised that WSA has a Multi Tech PC (which is equivalent to an IBM PC XT), an Epson Printer, and Word Star, Lotus 1-2-3, and dBase software.

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VII. Relationships and Responsibilities

The independent five-person evaluation team will be responsible to and report directly to the USAID Project Officer for the FRMIP or his designate, and to the Chairman of the Joint Evaluation Committee designated by the BDG.

This evaluation is a joint USAID/BDG undertaking. Within the first three business days of the evaluation team's arrival in country, it will meet with the Joint Evaluation Committee chaired by the BDG designee and composed of appropriate USAID representatives and BDG representatives from the FRMIP Project Implementation Office; the Local Development Division; the Implementation, Monitoring, and Evaluation Division; the Local Government Engineering Bureau; the External Resources Division; and the Planning Commission, as available. The team will meet with committee members to solicit their views for formulating key issues, to present its preliminary findings and conclusions, discuss its draft report, and present a final debriefing. Convocations of the entire committee shall be in workshops whenever possible. Throughout, the team will take committee concerns into account in proceeding with its information gathering and in preparing subsequent versions of its report.

VIII. Reporting Requirements

The evaluation Team Leader will brief the FRMIP Project Officer and Evaluation Committee Chairman on team activities at least once a week. No less than twelve days before the team's departure from Bangladesh, the Team Leader will distribute copies of a draft evaluation report to all members of the Joint Evaluation Committee and submit 10 additional copies to the FRMIP Project Officer. Within two weeks of the team's departure from Bangladesh, the Team Leader will transmit 30 copies of the final evaluation report to USAID/Bangladesh. This final evaluation report must contain a "Project Evaluation Summary," or "PES," which adheres to the prescribed AID format and satisfies AID requirements for such summaries.

APPENDIX C

Project Districts Visited

Moulavibazar

Sylhet

Rangpur

Gaibandha

Faridpur

Rajbari

Thirteen FRMIP roads were inspected in the above six districts, totaling 155 km.

Road Sites Visited, Field Trips / FRMIP Evaluation

Roads Visited	Length	Type	Date
Case Study Road Srimangal - Sindurkham (Moulavibazar District)	10 km	earth	4/23/89
Sector Assessment Case Study Road Tea Estate Road Natural Gas Fertilizer Factory	17 km	earth	4/24/89
FRMIP 3 Fenchuganj - Garlachara (Moulavibazar District)	10 km	bit carpet concrete slab w.b. mac (ends nowhere)	4/24/89
FRMIP 4 Sylhet - Shiberbazar Road (Sylhet District)	5 km	bit carpet	4/25/89
FRMIP 5 Dhakadakshim - Hatimagani (maint on this 1989/88) (Sylhet District)	9 km	earth	4/26/89
FRMIP 6 Dhakadakshin - Beanibazar (Sylhet District)	16 km	bit carpet-skm wbm 11 km	4/26/89
FRMIP 7 Mirgani - Jaldhaka (Nilphamari District)	13.6 km	wbm 4.59 hbb 1.64 bit carp 7.3	4/28/89
FRMIP 8 Rangpur - Mahiganj (Rangpur District) now FRA	2.0 km	bit carpet 1.0 km	4/29/89
FRMIP 9 Mahiganj - Damdama Road (Rangpur District) 84/84	4.3 km	earth maint.	4/29/89
FRMIP 10 Barodorga - Bhendabari	10.47 km	bit carpet	4/29/89
Case Study Road 11 Shyampar - Lahirihat (Sugar Mill Road)	7 km	bit carpet	4/29/89
FRMIP 12 Gaibandha Kamarjani (Gaibandha District)	13.0 km	2.8 km bit carpet 2.0 km WBM 7.4 km earth	5/1/89
FRMIP 13 Kamdia - Ghoraghat Road (Gaibandha District)	8.84 km	bit carpet	5/1/89
FRMIP 14 Badarpur - Saltha Road (Faridpur District)	13.7 km	4.7 km bit carpet 9.5 hbb	5/14/89
FRMIP 15 Hatrishmapur-Sadarpur- Piajkahi Road, (Faridpur District.) Contract maint. on this road to use maint. funds (embankment protection)	23.0 km	6.0 km bit carpet 16.0 km hbb	5/15/89
FRMIP 16 Madhukhali Babakandi-Rajbari Road (Faridpur and Rajbari Districts)	20 km	9.5 km bit carpet-good 10.5 km maint.	5/16/89

APPENDIX D

FRMIP Road Maintenance and Improvement Statistics

**March 31, 1989 Financial Summary – Feeder Roads Maintenance & Improvement Project
(U.S. Dollars)**

<i>ELEMENT</i>	<i>OBLIGATED</i>	<i>EARMARK</i>	<i>COMMIT</i>	<i>DISBURSE</i>	<i>UE</i>	<i>BALANCE</i>	<i>UD</i>	<i>DE-OBLIG.</i>	
<i>Column ID No.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>UC</i>	<i>6</i>	<i>7</i>	<i>8</i>
Technical Assistant	6,728,928.58	6,693,485.00	6,643,059.00	6,253,665.85	35,443.58 ^b	50,426.00 ^c	389,393.15 ^d	10,356.58	
Training	104,077.71	-	-	-	104,077.71	-	-	104,077.71	
Equipment	1,174,298.61	715,443.45	715,443.45	715,443.45	458,855.16	-	-	458,855.16	
Socio Ec. Assess.	230,539.68	230,539.68	32,539.68	32,539.68	-	198,000.00 ^a	-	-	
Road Dev Fund	5,160,155.42	5,142,984.91	5,141,873.91	4,367,951.57	17,170.51	1,111.00	773,922.34	18,281.51 ^e	
Local Fin Study	450,000.00	450,000.00	450,000.00	450,000.00	-	-	-	-	
Rd. Maint. Fund	352,000.00	251,320.48	251,320.48	18,849.00	100,679.52	-	232,471.48	100,679.52 ^e	
TOTAL:	14,200,000.00	13,483,773.52	13,234,236.52	11,838,449.55	716,226.48	249,226.48	1,395,786.97	692,250.48	

Note:

1. *UE* = Unearmarked (Column 1-2)
2. *UC* = Uncommitted (Column 2-3)
3. *UD* = Undisbursed (Column 3-4)
4. Deobligated = (Columns 5+6 with the exception of \$273,513.00 under column 5 and 6)

^a \$198,000.00 has been reversed for Joint Evaluation against PIL 31 under PIO/T No. 388-0056-3-60170, and is not being earmarked and deobligated at this time.

^b \$26,632.00 has been reserved for WSA Host Country Contract Amendment No. 8.

^c \$48,881.00 earmarked for the consultants' direct AID contract, is being retained until the consultants' financial close-out is finalized.

^d Contract being retained until consultants' financial close-out.

^e include any amounts committed under PIL 29.

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FRMIP ROAD MAINTENANCE AND IMPROVEMENT STATISTICS

Old District Area

	Rangpur	Faridpur	Sylhet	Total
1. (a) Total KM of Feeder Roads	2,067 (XW)	950 (XW)	793 (XW)	3,810
(b) Total KM of Type A Roads	1,458 (XW)	447 (XW)	282 (XW)	2,187
(c) Total KM of Type B Roads	609 (XW)	534 (XW)	511 (XW)	1,654
(d) Total KM of Other Roads (Not A or B if they exist)	NA	NA	NA	
2. (a) Total KM of pucca Type B Feeder Roads	101.79 (W)	54.00 (W)	142.60 (W)	298.39
(b) Total KM of HBB Type B Feeder Roads	64.95 (W)	129.00 (W)	39.45 (W)	233.4
(c) Total KM of Kutcha Type B Feeder Roads	442.39 (W)	351.00 (W)	329.07 (W)	1122.46
3. (a) Total KM of Feeder Roads completely improved by FRMIP	22.40 (W)	44.70 (W)	13.50 (W)	80.6
(b) Total KM of Feeder Roads partially improved by FRMIP	24.97 (W)	25.60 (W)	34.69 (W)	85.26
(c) Total KM of Feeder Roads improved (line 3a + 3b)	47.37 (W)	70.30 (W)	48.19 (W)	165.86
(d) % KM of FRMIP improved roads to total feeder road KM (Line 3c/1a X 100)	2.29%(XW)	7.40%(XW)	6.08%(XW)	4.35%
(e) % KM of FRMIP completely improved roads to total pucca road KM (Line 3a/2a X 100)	22.01%(XW)	82.78%(XW)	9.47%(XW)	27.01%
4. (a) Total KM of Feeder Roads maintained under FRMIP	35.43 (W)	69.35 (W)	89.5 (W)	194.28
(b) % FRMIP roads maintained to all feeder roads (Line 4a/1a X 100)	1.71%(XW)	7.30%(XW)	11.29%(XW)	5.10%
(c) Total KM of pucca Feeder Roads maintained under FRMIP	35.9 (W)	51.35 (W)	23.25 (W)	110.5
(d) % FRMIP pucca roads maintained to all pucca roads (Line 4c/2a X 100)	35.27%(XW)	95.09%(XW)	16.30%(XW)	37.03%
(e) Total KM of HBB Feeder Roads maintained under FRMIP	1.64 (W)	18 (W)	1.39 (W)	21.03
(f) % FRMIP HBB roads maintained to all HBB roads (Line 4e/2b X 100)	2.53%(XW)	13.95%(XW)	3.52%(XW)	9.01%
(g) Total KM of kutcha roads maintained under FRMIP	4.75 (W)	0.00 (W)	64.86 (W)	69.61
(h) % FRMIP kutcha roads maintained to all kutcha roads (Line 4g/2c X 100)	1.07%(XW)	0.00%(XW)	19.71%(XW)	6.20%
5. (a) Total KM of pucca roads improved by FRMIP which received FRMIP maintenance	22.54 (W)	31.35 (W)	4.60 (W)	58.49
(b) % total FRMIP improved road KM which received FRMIP maintenance (Line 5a/3c X 100)	47.58%(XW)	44.59%(XW)	9.55%(XW)	35.26%

	Rangpur	Faridpur	Sylhet	Total
6. (a) Average Taka cost per KM for improvement work on FRMIP	1,265,740 (W)	1,225,000 (W)	1,175,000 (W)	1,221,913.33
(b) Average Taka cost per KM for pucca maintenance work on FRMIP	100,000.00 (W)	97,500.00 (W)	80,000.00 (W)	92,500.00
(c) Average Taka cost per KM for kutcha maintenance work on FRMIP	18,000.00 (W)	NA (W)	18,000.00 (W)	18,000.00
(d) Estimated annual cost of routine maintenance for pucca roads improved by FRMIP				
(i) In Taka per KM	100,000.00 (W)	97,500.00 (W)	80,000.00 (W)	92,500.00
(ii) Total (Line 6d(i) X 3c)	4,737,000.00 (W)	6,854,250.00 (W)	3,855,200.00 (W)	15,446,450.00
(e) Estimated annual cost of routine maintenance for all pucca roads				
(i) In Taka per KM	200,000.00 (E)	200,000.00 (W)	160,000.00 (E)	186,666.67
(ii) Total (Line 6e(i) X 2a)	20,358,000.00 (E)	10,800,000.00 (E)	22,816,000.00 (E)	53,974,000.00
7. (a) Total road KM maintained more than once on FRMIP	17.06	15	14.60	46.66
(b) Total pucca road KM maintained more than once on FRMIP	17.06	11	4.70	32.76
(c) Total kutcha road KM maintained more than once on FRMIP	0	0	9.90	9.90
(d) % of all road KM maintained more than once on FRMIP (Line 7a/1a X 100)	0.83%	1.58%	1.84%	1.22%
(e) % of all pucca road KM maintained more than once on FRMIP (Line 7b/2a X 100)	16.76%	20.37%	3.30%	10.98%
(f) % of all kutcha road KM maintained more than once on FRMIP (Line 7c/2c X 100)	0.00%	0.00%	3.01%	0.88%
8. (a) Total No. of bridges & culverts less than 40 ft. built under FRMIP	20 (W)	14 (W)	143 (W)	177
(b) Total No. of bridges & culverts greater than 40 ft. built under FRMIP	2 (W)	4 (W)	7 (W)	13
(c) Total No. of bridges & culverts less than 40 ft. maintained under FRMIP	2 (W)	6 (W)	0 (W)	8
(d) Total No. of bridges & culverts greater than 40 ft. maintained under FRMIP	0	3	0	3
9. (a) Total No. of different roads receiving improvement work only under FRMIP	(W)	6 (W)	8 (W)	24

	Rangpur	Feridpur	Sylhet	Total
(b) Total No. of different roads receiving maintenance work only under FRMIP	10 (W)	6 (W)	12 (W)	8
(c) Total No. of different roads receiving both improvement and maintenance work under FRMIP	4 (W)	4 (W)	7 (W)	15
(d) Total No. of new districts benefiting from road improvement only under FRMIP	5	4	3	12
(e) Total No. of new districts benefiting from road maintenance only under FRMIP	3	2	3	8
(f) Total No. of new districts benefiting from both road improvement and maintenance under FRMIP	3	2	3	8
(g) Total No. of new districts benefiting from either improvement or maintenance under FRMIP	5	4	3	12
(h) Total No. of upazilas benefiting from road improvement only under FRMIP	9	10	10	29
(i) Total No. of upazilas benefiting from road maintenance only under FRMIP	2	6	13	21
(j) Total No. of upazilas benefiting from both road improvement and maintenance under FRMIP	11	6	10	27
(k) Total No. of upazilas benefiting from either improvement or maintenance under FRMIP	11	10	13	34

NOTE: W- Figure based on actual WSA measurement or verifiable figures.
 XW- Figure extrapolated from actual WSA measurements or verifiable FRMIP figures.
 E- Educated guess by WSA staff.
 N/A- Figure not available and educated guess not available.

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