DOCUMENT OF

THE WORLD BANK

FOR OFFICIAL USE ONLY

Report No: 130146-BD

PROGRAM APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT SDR 303.30 MILLION (US$425 MILLION EQUIVALENT)

TO THE

PEOPLE'S REPUBLIC OF BANGLADESH

FOR AN

OPERATION FOR SUPPORTING RURAL BRIDGES (SUPRB)

October 2, 2018

Transport Global Practice
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective August 31, 2018)

Currency Unit = Bangladesh Taka (BDT)
BDT 83.75 = US$1
US$ 1.40139 = SDR 1

GOVERNMENT OF BANGLADESH FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
BIMP	Bridges Improvement and Maintenance Program
BNBC	Bangladesh National Building Code
CAO	Chief Accounts Officer
CGA	Controller General of Accounts
CPF	Country Partnership Framework
CS	Condition State
C&AG	Comptroller and Auditor General
DLI	Disbursement Linked Indicator
DP	Development Partner
e-CM	Electronic Contract Management
e-GP	Electronic Government Procurement
ePMS	Electronic Project Monitoring System
ESMF	Environmental and Social Management Framework
ESSA	Environmental and Social Systems Assessment
FAPAD	Foreign Aided Projects Audit Directorate
FY	Financial Year
GDP	Gross Domestic Product
GIS	Geographic Information System
GoB	Government of Bangladesh
GRS	Grievance Redress System
IDB	Islamic Development Bank
ILO	International Labour Organization
IMED	Implementation Monitoring and Evaluation Division
IPF	Investment Project Financing
IR	Intermediate Indicator
IT	Information Technology
JICA	Japan International Cooperation Agency
KfW	Reconstruction Credit Institute of Germany (*Kreditanstalt Für Wiederaufbau*)
km	Kilometer
LGD	Local Government Division
LGED	Local Government Engineering Department
LRFD	Load and Resistance Factor Design
M&E	Monitoring and Evaluation
MoF	Ministry of Finance
NGO	Nongovernmental Organization

NPV	Net Present Value
OHS	Occupational Health and Safety
PAP	Program Action Plan
PDO	Program Development Objective
PforR	Program-for-Results
PM&E	Project Monitoring and Evaluation Unit
POM	Program Operations Manual
RTIP	Rural Transport Improvement Project
RTIP II	Second Rural Transport Improvement Project
RSDMS	Road and Structure Database Management System
RuBIMS	Rural Bridge Information and Management System
SDR	Special Drawing Rights
SE	Socioeconomic
SEA	Sexual Exploitation and Abuse
SGBV	Sexual and Gender-based Violence
SupRB	Operation for Supporting Rural Bridges
uFMS	Unified Financial Management System
UNDP	United Nations Development Programme
UNR	*Union* Road
UZR	*Upazila* Road

Regional Vice President:	Hartwig Schafer
Global Practice Vice President:	Laura Tuck
Country Director:	Qimiao Fan
Practice Manager:	Karla Gonzalez Carvajal
Task Team Leader(s):	A K Farhad Ahmed

Bangladesh
OPERATION FOR SUPPORTING RURAL BRIDGES (SupRB)

Table of Contents

Page

PAD DATA SHEET

Bangladesh

OPERATION FOR SUPPORTING RURAL BRIDGES (SupRB)

PROGRAM APPRAISAL DOCUMENT

South Asia Region

Transport & Digital Development

Basic Information			
Date:	October 2, 2018	Sectors:	Roads & Highways (100%)
Country Director:	Qimiao Fan	Themes:	Infrastructure Services for private sector development (90%); Governance & Institution Building (10%)
Practice Manager	Karla Gonzalez Carvajal		
Global Practice Vice President:	Laura Tuck		
Program ID:	P161928		
Team Leader(s):	A K Farhad Ahmed		

Program Implementation Period:	Start Date:	December 1, 2018	End Date:	December 31, 2023
Expected Financing Effectiveness Date:	November 30, 2018			
Expected Financing Closing Date:	December 31, 2023			

Program Financing Data		
[ ] Loan	[ ] Grant	[ ] Other
[X] Credit		

For Loans/Credits/Others (US$ Millions):

Total Program Cost:	US$618 million		Total Bank Financing:	US$425 million	
Total Cofinancing:	US$0.0 million		Financing Gap:		

Financing Source	**Amount**
BORROWER/RECIPIENT	US$193 million
IBRD	
IDA	US$425 million
Total	US$618 million

Borrower: People's Republic of Bangladesh						
Responsible Agency: Local Government Engineering Department, within the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives						
Contact: Mr. Iftekhar Ahmed				Title:	Additional Chief Engineer	
Telephone No.: +880 2-9127158				Email:	ace.planning@lged.gov.bd	
Responsible Agency:						
Contact:				Title:		
Telephone No.:				Email:		

Expected Disbursements (in US$, Millions)						
Fiscal Year	2019	2020	2021	2022	2023	2024
Annual	98	24	68	82	95	58
Cumulative	98	122	190	272	367	425

Program Development Objective(s)

The Program Development Objective is to improve and preserve rural bridges to support connectivity and climate resiliency, and strengthen institutional management

Compliance

Policy

Does the program depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the program require any waivers of Bank policies applicable to Program-for-Results operations?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [X]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]

Overall Risk Rating: Substantial

Legal Covenants

Name	Recurrent	Due Date	Frequency
The Recipient shall issue an Operation Manual, in a manner satisfactory to the Association, setting out detailed institutional, administrative, financial, technical and operational guidelines and procedures for the implementation of the operation prior to withdrawing any financing proceeds, and thereafter, implement the operation in accordance with said manual.	Yes	Prior to withdrawing financing proceeds	Yes
The Recipient shall carry out the Program, or cause the Program to be carried out, in accordance with the provisions of the Anti-Corruption Guidelines.	Yes	Ongoing	Yes

The Recipient shall carry out the Program Action Plan in accordance with the schedule set out in the said Program Action Plan in a manner satisfactory to the Association..	Yes	As specified in Annex 5	Yes
The Recipient shall create twenty (20) new LGED headquarters-level positions to strengthen its institutional capacity for planning, designing and managing rural bridge assets under the Operation.	No	December 31, 2019	n.a.

Description of Covenant

Team Composition

Bank Staff

Name	Title	Specialization	Unit
A K Farhad Ahmed	Sr. Transport Specialist	Transport	GTD07
Jorge Luis Alva-Luperdi	Senior Counsel	Legal	LGEAM
Vidya Venugopal	Counsel	Legal	LEGES
Oceane Keou	Transport Specialist	Transport	GTD06
Ishtiak Siddique	Sr. Procurement Specialist	Procurement	GGO06
Muneeza Mehmood Alam	Young Professional	Gender and Transport	GTD06
Mohammad Reaz Uddin Chowdhury	Sr. Financial Management Specialist	Financial Management	GGO24
Md. Akhtaruzzaman	Sr. Social Development Specialist	Social Development	GSU06
Iqbal Ahmed	Environmental Specialist	Environment	GEN06
Mohammad Roushan Kabir	Consultant	Transport	GTD06
Md. Shahidul Haque	Consultant	Gender, Citizen Participation and Transport	GTD06
Vishnu Shrestha	Consultant	Program-for-Results	GTD06
Kazi Shahazada Shahanewaz Hossain	Consultant	Transport and Data Management	GENDR
Md. Shehab Uddin	Consultant	Transport and Data Management	GENDR
Arpita Roy	Consultant	Institutional Development	GTD06
Rex Josheph Quiah	Team Assistant	Administration	SACBD
Md Towshikur Rahman	Team Assistant	Technical Support	GTD06

Non Bank Staff

Name	Title	City
Tofail Ahmed	Consultant, Political Economy	Dhaka
Md. Haider Ali	Consultant, Bridge Costing	Dhaka

I. STRATEGIC CONTEXT

A. Country Context

1. Bangladesh, one of the world's most populous countries, crossed the lower-middle-income country threshold in FY2014. The country has an estimated total population of 165 million (approximately 1,140 persons per km^2 area). Bangladesh's gross national income per capita has increased from US$100 in 1975 to US$1,480 in 2017. The gross domestic product (GDP) of the country grew at a rate of roughly 6.5 percent per year since 2010. The economy is projected to grow at 7.65 percent in FY2018, driven by manufacturing and services. In the late 1970s, Bangladesh was often labelled as the development 'basket case'. A recent World Bank Systematic Country Diagnostic Study[1] has identified key factors that invalidated such a perception. One of them is development of a rural road network that blurred the rural-urban divide and established connectivity between remote rural areas with main and secondary cities, towns, and market centers.

2. Progress on reducing extreme poverty and boosting shared prosperity through human development and employment generation has continued with the poverty incidence based on the international $1.90 per capita per day poverty line (measured on the basis of the Purchasing Power Parity exchange rate) declining from 44.2 percent in 1991 to a 13.8 percent in 2016 (latest available poverty data). Bangladesh's performance against the Millennium Development Goals (MDG) goals was impressive against the South Asia Region average for most of the indicators.

3. Since 2010, the pace of poverty reduction and the rate of job creation has slowed. Bangladesh needs more effort in improving its growth rate to meet its target of moving up the middle income rankings by 2021 and eliminating poverty by 2030. For accelerating private sector-led growth with improved investment climate, the key challenges are the need for increased infrastructure and power, with much improved quality in spending public resources, better regulations and enhanced skills of its vast and rapidly increasing labor force.

4. The World Bank has identified the creation of more and better jobs as the most promising way of moving out of poverty. Additionally, inland connectivity and logistics is identified as one of the five key focus areas that might have a transformative impact on accelerating the creation of more jobs. There is a significant body of empirical evidence that confirms the role of inland connectivity, in particular, rural connectivity, on economic development and social well-being. For example, empirical evidence shows that rural road investments have significant impact on poverty reduction through higher agriculture production, higher wages, lower input and transportation costs, as well as higher output prices. Improvements have also contributed to higher schooling rates for both boys and girls.

5. The development and maintenance of rural road network continues to be one of the public policy priorities of Bangladesh. The aim is the optimum integration of the network with higher level road networks or with other transport networks. However, Bangladesh needs to move away from widespread expansion of the road network by constructing rural roads to the consolidation of connectivity gains made through investments since the 1980s. Given that Bangladesh is one of the most climate vulnerable countries, it is also necessary to improve the climate resiliency of the existing or new rural transport infrastructure, including bridges.

[1] World Bank. 2015. "A Systematic Country Diagnostic: More and Better Jobs to Accelerate Shared Growth and End Extreme Poverty." World Bank, South Asia Region.

B. Sectoral (or multi-sectoral) and Institutional Context

6. Rural populations in Bangladesh have high all-weather road access. In a recent study[2] that calculated a rural access index[3], Bangladesh topped eight countries in Asia and Africa. For Bangladesh the index value was found to be approximately 87 percent. Kenya and Nepal were a distant second and third among the eight countries, with rural access index values of 56 percent and 54 percent, respectively.

7. Bangladesh started the systematic development of its rural road network in the mid-1980s. The Government's Rural Development Strategy, unveiled in a 1984 policy paper[4], was the main driver for the development of rural roads. As part of the strategy, the Government has identified approximately 2,100 major markets or growth centers. Subsequently, these growth centers, along with roads connecting them with the higher-level networks, were constructed. These roads are categorized as *upazila* roads (UZRs).[5]

8. Bangladesh has an extensive network of rural roads. The total road network size of the country is roughly 375,000 km (road density of roughly 250 km per 100 km^2). This road density is substantially higher than other South Asian countries, including India (160 km per 100 km^2), Nepal (54 km per 100 km^2) and Sri Lanka (150 per 100 km^2). The rural road network makes up 94 percent of the network. UZRs and *union* roads (UNRs) comprise 11 percent and 12 percent of the rural road network, respectively. Over a quarter (27 percent) of the rural road network is paved (UZR and UNR comparable figures are 82 percent and 57 percent respectively). Most of the paved rural roads are in good to fair condition (55 percent and 54 percent of paved UZRs and UNRs respectively according to 2014–2015 survey results). Unpaved road condition data are not available. It is believed that only a small portion of them are in good or fair condition.

9. In 2013, the Government of Bangladesh (GoB) adopted 'The Rural Roads and Bridges Maintenance Policy'. The objective of the policy was to develop a sustainable rural transport system through appropriate maintenance management to provide safe operation of vehicles and ensure necessary funding for maintenance. The policy document has emphasized the importance of maintenance of bridges and UZRs and UNRs. The policy also emphasized the importance of road safety, citizen participation, gender, and implementation management linked to the maintenance of rural roads and bridges.

10. Bridges play an important part in Bangladesh's land transport system. This is inevitable given the country's topography – low-lying flat lands, crisscrossed by many rivers and their tributaries. Typically, the bridges connect two separate road sections to provide full connectivity to isolated rural communities. Bridges are critical for the efficient operation of the road system. A bridge is required for every 4.5 km of UZRs and UNRs, as per the current inventory. Over a fifth of gaps on UZRs and UNRs are yet to be bridged.

11. The total replacement value of Bangladesh's rural bridges and culverts is roughly US$6.5 billion. This figure is approximately 2.6 percent of Bangladesh's 2017 GDP. There are approximately 15,000 existing rural bridges (over 6 meters length) on UZRs and UNRs in Bangladesh. Table 1 provides summary

[2] World Bank. 2016. "New Rural Access Index: Main Determinants and Correlation to Poverty." Policy Research Working Paper 7876

[3] The index provides the proportion of people who have access to all-weather roads within an approximate walking distance of 2 km.

[4] Bangladesh Planning Commission. 1984. "Strategy for Rural Development Projects: A Sectoral Policy Paper".

[5] Bangladesh's rural roads are divided into three categories: (a) UZRs: roads connecting *upazila* headquarters with growth center(s) or one growth center with another growth center by a single main connection or connecting growth center to higher road system; (b) UNRs: roads connecting *union* headquarters with *upazila* headquarters, growth centers, or local markets or with each other; (c) village roads: roads connecting villages with *union* headquarters, local markets, farms, and *ghats* (waterways landing stations) or with each other and roads within a village.

information on UZR and UNR bridges. Given the significant role that bridges play in public lives, they are an important part of public discourse in Bangladesh.

Table 1. UZR and UNR Bridge Summary (above 6 meters length) Information[6]

Road Type	Total Bridged Plus Non-Bridged Gaps		Existing Bridges		Existing Gaps	
	Number	Average Length (m)	Number	Average Length (m)	Number	Average Length (m)
UZR	8,790	40	7,573	32	1,217	88
UNR	8,994	30	7,094	24	1,900	54
UZR plus UNR	**17,784**	**35**	**14,667**	**28**	**3,117**	**67**

12. The proposed operation will be implemented by the Local Government Engineering Department (LGED) under the Local Government Division (LGD) of the Ministry of Local Government, Rural Development, and Cooperatives. The LGED has demonstrated over the years that it has the capacity to implement similar programs. The International Development Association's or IDA's (hereinafter referred as the "Association") involvement with the LGED dates back over 28 years. The first Association-assisted rural infrastructure project was implemented between 1989 and 1997. Subsequently, the LGED implemented two major infrastructure improvement projects—Second Rural Roads and Markets Improvement and Maintenance Project (P09518; 1996–2001) and Rural Transport Improvement Project (RTIP) (P071435; 2003–2010). Another Association-financed transport sector project—Second Rural Transport Improvement Project (RTIP II) (P123828)—is currently ongoing and will close by the end of 2018. Currently, two other Association-financed projects are being implemented by the LGED: the Municipal Governance and Services Project (P133653) and the Emergency Cyclone Recovery and Reconstruction Project (P111272).

13. Although the LGED has been implementing government and development- partner (DP) supported projects/programs, there is scopes to improve its overall performance further. One of the major issues faced by the LGED is that interventions under different projects or programs (primarily those that are government financed) are often selected on a non-objective basis. Many development partners (DPs), including the Association, have provided considerable support to the LGED (mainly in 1990s and 2000s) aimed at developing its institutional capacity in areas such as project planning, design, implementation, information and communication systems, and monitoring and evaluation (M&E). However, the number of DPs currently working with the LGED is now lower. An LGED and World Bank joint operational risk assessment in 2007-2008 recommended enhancement of LGED's capacity in a few areas including planning, contract management and overall oversight of fiduciary activities and monitoring areas. The assessment also identified information and communication systems as needing improvement. The Association supported project (RTIP II) has been working with LGED in enhancing LGED's capacity in some of the assessment recommended areas. Nonetheless, further work needs to be done to mitigate risks in the mentioned areas and to deepen RTIP II achievements.

C. Relationship to the CAS/CPF and Rationale for Use of Instrument

14. The proposed operation is fully aligned with the World Bank's Country Partnership Framework[7] (FY2016–2020) and the World Bank's twin goals of ending extreme poverty and promoting shared prosperity. Furthermore, the framework is aligned with the Government's Seventh Five-Year Plan and

[6] Source: LGED Road and Structure Database Management System (RSDMS), July 2017

[7] World Bank. 2016. "Country Partnership Framework for Bangladesh." Report Number 103723-BD.

follows the same planning time scale (FY2016–2020). The proposed Operation for Supporting Rural Bridges (SupRB) will directly contribute to achieving Objective 1.2 – Improved Transport Connectivity – one of the five objectives of the Growth and Competitiveness focus area. This will be achieved through the preservation and improvement of rural transport connectivity with the construction and maintenance of rural bridges. The operation is also expected to contribute to the third focus area of the Country Partnership Framework: Climate and Environment Management. This will be achieved through the construction and replacement of bridges with climate-resilient features in the most climate-vulnerable districts.

15. The Government's current rural bridge approach lacks coherency and an appropriate planning framework. The institutional mechanism that underpins its performance is unsuitable for long-term sustainability of investments. Experience from the Association's support to a similar program in Nepal has demonstrated that extensive experience in planning, implementation, management, and M&E is critical to carrying out such a program, with its complex challenges. External support is often required to streamline, structure and rationalize various aspects of such a program. This underpins the operation's strategic relevance to Bangladesh's bridge operation development and provides a strong case for the Association's engagement.

16. The proposed operation is designed as a 'hybrid' one. It comprises two financing instruments: Program-for-Results (PforR) and Investment Project Financing (IPF). The PforR portion of the operation will support capital investments in UZR and UNR bridges, including maintenance, rehabilitation, widening, replacement, and new construction. The IPF portion will support institutional strengthening and capacity building activities under the operation.

17. The capital investment portion of the operation is designed to use program institutions to achieve results and closely monitor performance. It is a strong candidate for PforR financing for the following reasons:

(a) The PforR instrument is better aligned with the government objective of sustainable rural bridge construction, maintenance, and management as the Program will utilize the GoB's relevant regulations and policies to achieve sustainable rural bridge outcomes including enhancing core business processes;

(b) The Association and other DPs have supported the LGED in the development of fiduciary, social, and environmental systems in line with intentional good practices. However, these systems have been implemented for specific operations. They are yet to be applied across all LGED projects. The PforR approach will support the application of these processes and procedures in rural bridge interventions in a government controlled program that will promote their wider application.

(c) Isolated project-style approaches have, to date, managed to create limited bridge assets. However, these approaches have failed to manage these assets in a sustainable manner. The PforR approach will help the Government to achieve a sustainable bridge asset management outcome.

(d) The Program will involve the design, implementation, and monitoring of many small-to-medium-value contracts across the country. The PforR approach will suit the LGED's decentralized implementation model and will reduce the transaction costs.

18. The IPF portion will support the institutional strengthening and capacity-building activities of the operation. This will complement the investments made under the PforR part. Such a 'hybrid' operation is necessary for improving the sustainable outcomes of operation interventions. The proposed IPF component, apart from complementing activities taken under the PforR part, will also support, among

others, deepening the information technology-information and communication technology-management information system-related efforts made under the Association-supported RTIP II, activities to disseminate the LGED's successes and achievements, and building the LGED's capacity to handle Occupational Health and Safety (OHS) at construction sites, labor rights, and gender issues.

II. PROGRAM DESCRIPTION

A. Government Program

19. Currently, the Government does not have a dedicated program that tackles rural bridge construction and maintenance issues comprehensively. Most new bridges are constructed as part of road projects. Currently, there are 10 exclusive bridge projects out of a total 102 rural infrastructure projects that the LGED is currently implementing. While 40 percent of the projects (41 in number) have considerable bridge elements in them (between 15 percent and 45 percent), a third of the projects (34 in number) contain less than 15 percent of bridge elements. There is only one DP-supported project (Saudi Fund for Development) that exclusively focuses on rural bridges. Another five DPs, including the Association, are supporting rural road/transport projects that contain bridge construction activities, with Japan International Cooperation Agency (JICA) being the largest among the DPs, considering the amount of investment in rural bridges (roughly US$80 million). The Association-supported RTIP II is supporting bridge construction activities. Nonetheless, none of the DPs are involved in rural bridge maintenance and rehabilitation. Moreover, there are no visible activities in the DP-assisted projects that support bridge subsector reforms.

20. In FY1992–1993, the Government launched a countrywide 'Rural Roads and Culvert Maintenance Program'[8]. The program's main objective was to establish a well-developed rural road system. The Government envisioned that the program will, among others, facilitate safe, comfortable, and fast rural transportation and reduce travel time, costs, and rate of road accidents. Since its inception, the program has been helping in the preservation and improvement of rural roads, albeit with insufficient amount to meet demands. The program has some visible impacts: most paved UZRs and UNRs are now in good or fair condition.

21. Expenditures for the preservation of rural bridge assets are insignificant. Between FY2013 and FY2017 the LGED spent just below 4 percent of the available maintenance resources for bridge maintenance under its Rural Roads and Culvert Maintenance Program. The total expenditure on bridge maintenance in FY2015–2016 was BDT 348 million (US$4.3 million) against a total allocation for roads and bridges of BDT 10,750 million (US$133 million).

B. Program Development Objective/s (PDO) and Key Results

22. The PDO is to improve and preserve rural bridges to support connectivity and climate resiliency, and strengthen institutional management. This will be achieved through the maintenance, capacity expansion, or replacement of existing rural bridges; construction of rural bridges on existing gaps; and through measure that enhance capacities for planning, implementation, and management of rural bridge activities.

23. An analysis of operation's results chain provides details of the inputs, outputs, outcomes and impacts of the proposed operation (Figure 2). Details of analysis results is included in the technical assessment report. The operation outputs include the improvement of business processes (technical, fiduciary, procurement, social and environmental delivery, and risk management) and physical outputs.

[8] The Bangladesh financial year runs from July 1 to June 30.

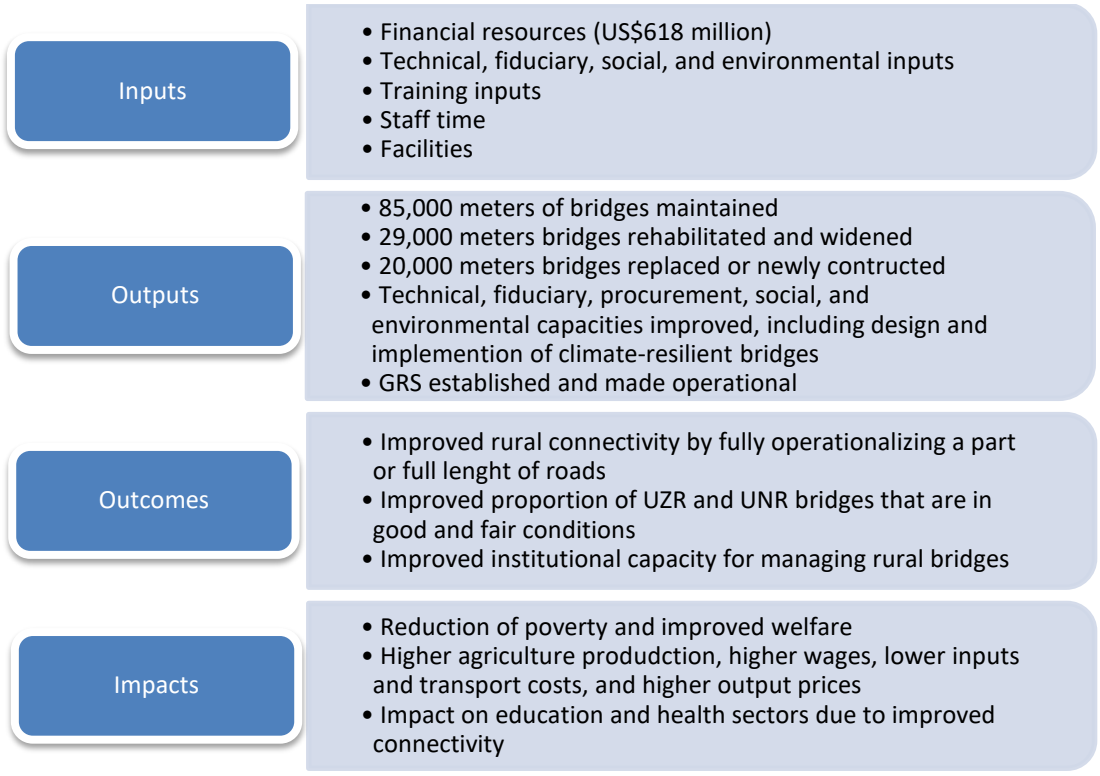
Improved rural connectivity, condition of rural bridge assets and institutional capacity for managing rural bridges are the expected outcomes of the operation.

24. The following four indicators will serve to measure the PDO's achievement (Annex 1 provides the Results Framework):

Table 2. PDO-level Results and Indicators

PDO-level Result	PDO-level Indicator
Preservation of rural bridges	**PDO 1:** *Upazila* or *union* road bridges that are in good and fair condition
Improved climate resiliency	**PDO 2:** *Upazila* or *union* road new bridges built or replaced with climate resilient features in 19 coastal districts
Improved rural connectivity	**PDO 3:** Length of severed or constrained *upazila* or *union* road links made fully operational
Institutional capacity, gender and citizen engagement	**PDO 4:** Program bridges designed using in-house technical resources

Figure 1: Operation Results Chain



C. PforR Program Scope

25. The Association will support the GoB's rural bridge-related activities (hereinafter referred as the 'Operation for Supporting Rural Bridges' or 'SupRB' or simply 'operation'). The operation consists of a "Program" and a "project". The Program is a subset of the LGED's overall program of capital investment for the construction and maintenance of rural bridges. Table 3 provides details of the government rural bridge program versus the scope of the proposed Program. The Program consists of following activities: (a) planning, technical design, quality control and management of rural bridges; (b) major and minor maintenance and rehabilitation of rural bridges; (c) capacity expansion (widening) and replacement of rural bridges; and (d) construction of short-to-medium-span new rural bridges, some of which with

climate-resilient features. The project consists of the following activities: (a) provision of technical assistance for supporting Program implementation; (b) provision of technical assistance for strengthening and building Program institutional capabilities; (c) provision of technical assistance including feasibility and analytical studies related to potential transport operations, including associated gender, social, environmental and occupational health and safety issues. Section II-E provides details of the project.

26. The Program will support the LGED's strategy for the sustainable development and maintenance of rural bridges. The main strategic elements include undertaking the creation of new bridge assets and the preservation of existing assets comprehensively to enhance and preserve rural connectivity, objective and competitive selection of rural bridge interventions under budget constraints that will ensure an optimum balance between creation and preservation of assets; replacing rural bridges that surpassed their economic lives and making unsafe bridges safer; and improving institutional capacity and core business processes to aid in the planning, design, construction, and management of bridges sustainably. The business processes include the creation of a Rural Bridge Information and Management System (RuBIMS) to help in informed rural bridge decision making. RuBIMS has a prioritization module that uses different criteria for the prioritization of bridge interventions. One of the two criteria used for the prioritization of new bridge interventions is the road connectivity, which estimates the length of road the bridge in question will make operational. This ensures that with the construction of the new bridge will not only help in enhancing rural connectivity optimally, but also help other government road projects, which lack adequate resources for new bridge construction, in leveraging additional benefits from the Program's new bridge construction investments.

Table 3. Government Projects/Programs Versus Proposed Program Coverage

Area	Government Program	The Program
New rural bridge construction	▪ 10 nos. exclusive rural bridge construction projects ▪ 75 nos. rural infrastructure development projects with bridge construction elements	Construction of new bridges and replacement of existing bridges as a subset of the proposed Program [*new Program*]
Rural bridge maintenance	1 no. Rural Road and Bridge Maintenance program	Covering only the rural bridge part of the government maintenance program
Objectives	▪ Different project/program objectives ▪ To establish a well-developed rural road system (maintenance program objective)	To improve and preserve rural bridges to support connectivity and climate resiliency, and strengthen institutional management
Activities	▪ Construction of new bridges on UZR, UNR and village roads ▪ Maintenance of existing bridges on UZR, UNR and village roads	Construction, replacement, capacity expansion, rehabilitation and maintenance of UZR and UNR bridges only
Geographical coverage	All 64 districts	61 districts (excluding three hill districts)
Bridge length	Total bridge length of up to 1,500 meters	Total bridge length of less than 100 meters (for capacity expansion, replacement and new construction). Up to 1,500 meters for other interventions.

27. The operation scope is defined in such a way that it contributes to the key results areas of the operation. As the previous section suggests, there are four key results areas in the operation: (a) condition of rural bridges, (b) climate resiliency of rural bridges, (c) rural connectivity, and (d) institutional capacity strengthening for managing the creation and preservation of rural bridge assets. Table 4 provides the links between operation intervention areas and the key results areas.

Table 4. Operation Interventions and Contribution to Key Results Areas

Intervention Areas	Rural Bridge Condition	Rural Bridge Climate Resiliency	Rural Connectivity	Institutional Capacity, Gender and Citizen Engagement
Rural bridge maintenance	▲	★	▲	◄►
Rural bridge rehabilitation	▲	★	▲	◄►
Rural bridge capacity expansion	◄►	★	▲	◄►
Rural bridge replacement	▲	★	▲	◄►
New rural bridge construction	★	★	▲	◄►
Capacity building and improvement of business processes	◄►	★	◄►	▲

Notes: ▲- Direct contribution; ★ - Indirect/partial contribution; ◄► - Neutral

28. The estimated funding envelope for the proposed operation over the five-year operation period is approximately US$618 million. The GoB and the Association will share 31 percent (US$193 million) and 69 percent (US$425 million), respectively, of the total operation costs (Table 5). The Association's funding includes US$393 million for the PforR component and US$32 million under the IPF component to support the institutional development and capacity-building activities. The GoB will continue to fund bridge maintenance, rehabilitation and capacity expansion activities with its existing nondevelopment (recurrent) budget provision. However, to facilitate the Program's expenditure tracking, a separate economic code will be created for supporting these bridge maintenance, rehabilitation and widening activities. Another budget provision, with an economic code, under development (capital) budget, will be required for accommodating other capital expenditures (replacement, and new construction of bridges) of the Program. Furthermore, the GoB will make a budget provision (development; recurrent) to support the operation's complementary activities linked to the institutional development component.

Table 5. Operation Financing (US$, millions)

Source	PforR Component	IPF Component	Total	Percentage of Total
GoB	193.00	0.00	193.00	31
IBRD/IDA	393.00	32.00	425.00	69
Total Operation Financing	**586.00**	**32.00**	**618.00**	**100**

Note: PforR expenditures are not earmarked against financiers.

29. The proposed Program will cover 61 districts of Bangladesh. Three hill districts are excluded as these districts have different administrative arrangements, as stipulated in three different legislations that created them.[9] The Program will support:

(a) Bridges on UZRs and UNRs only;

(b) Minor and major maintenance, rehabilitation, capacity expansion (of narrow bridges that have been constraining the smooth functioning of the UZR and UNR networks, including the safe vehicle operations), and replacement bridges (that have surpassed their service lives or have been assessed to be unsafe for vehicle operations); and

[9] Three hill district councils (Bandarban, Rangamati, and Khagrachari) were created in 1989 through three separate pieces of legislations.

(c) New construction of short- to medium-length new bridges, which are vital for improving rural connectivity, but are not financed by the LGED's existing projects.

30. The Program excludes any activities which:

(a) in the opinion of the Association, are likely to have significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or affected people;

(b) involve the procurement of: (i) works, estimated to cost US$50,000,000 equivalent or more per contract; (ii) goods, estimated to cost US$30,000,000 equivalent or more per contract; (iii) non-consulting services, estimated to cost US$30,000,000 equivalent or more per contract; or (iv) consulting services, estimated to cost US$15,000,000 equivalent or more per contract;

(c) are financed by any other financier or by the Association under any other loan, credit or grant;

(d) involve the capacity expansion (widening), replacement and new construction of bridges with a length of hundred (100) meters or above;

(e) involve any construction of bridges in environmental sensitive areas, such as Recipient-listed national parks and conservation areas;

(f) involve the procurement of works, goods, non-consulting services and consulting services under open tendering method, in which: (i) bids are invited and/or rejected based on a percentage above or below the estimated cost; and/or (ii) awards using lottery systems are allowed; and

(g) involve the procurement of works, goods, non-consulting services and consulting services contracts in which awarded bids disregard tenderer's qualifications and/or experience requirements.

31. Road users in rural Bangladesh will be the main beneficiaries of the Program. They will benefit from the enhanced or restored year-round access to social, economic, and life-enriching facilities and services on an improved rural road network from the construction of new bridges and maintenance, rehabilitation, and replacement of structurally unsound bridges. Given the Program's nature, which will involve rural road networkwide scope in 61 districts, the beneficiaries will include all rural road users in those districts, including transport operators (both freight and passenger), women, children, the poor, and physically challenged persons who use the network. The new bridge construction Program, in remote rural areas of the country, will benefit an estimated 107 million people either directly or indirectly. This figure is equivalent to two-thirds of the country population. Improved physical access to health facilities and educational institutions will particularly benefit women, especially during the rainy seasons, in the Program districts. The investment Program will generate approximately 5.5 million person-days of employment including long-term maintenance work. Approximately two-thirds of the employment opportunities will be created for the unskilled laborers.

32. No significant roles of DPs have been envisaged at this moment. The Program plans to approach bi-lateral donors to support the DLI verification process by providing technical assistance (see section below). Also, the Program will open future opportunities for other DPs to support the government's rural bridge program following the Program concept. The LGED will keep the DPs informed on the Program progress.

D. Disbursement Linked Indicators and Verification Protocols

33. The Program has a total of eight disbursement linked indicators (DLIs). Annex 2 provides DLI details with their verification protocols. As shown in Table 2.1 the first five DLIs are linked to the Program's capital investments and the rest of the DLIs are process DLIs. Process DLIs are selected for improving the

Program's business processes and transparency and accountability, which in turn will help achieve the Program's long-term sustainability. Out of them, five DLIs (DLI-1 to DLI-5) will be fully scalable. This means that disbursements against these DLIs can be made even if a portion of the target value is achieved. Disbursements against DLI-6 and DLI-8 will be 'all-or-nothing'. DLI-7 will be only partially scalable.

34. The DLIs will be verified using predefined verification protocols detailed in Annex 2. Bridges selected for disbursement against DLI-1 and DLI-2 (major and minor maintenance), DLI-3 and DLI-4 (rehabilitation and capacity expansion), and DLI-5 (replacement and new construction) will be required to meet a full list of eligibility criteria as detailed in the verification protocols. The LGED will submit dossiers that will elaborate the achievement of results. These dossiers will be used as the basis for results verification by the Implementation Monitoring and Evaluation Division (IMED). These dossiers will also include information on the verification protocol items. Apart from desk reviews, field verifications will also be conducted, as required by the verification protocols, for results verification.

35. The IMED under the Ministry of Planning will be responsible for the verification of the Program DLIs. The Director General of Monitoring and Evaluation Sector-3 will lead the verification process from IMED side. The Association supported Health Sector Support Project (P160846) has been using IMED for the verification of DLIs. The experience of the project has so far been good. Furthermore, an Association supported project, Digitizing Implementation Monitoring and Public Procurement Project (P160758), has been assisting the IMED in its capacity building. The project has taken up activities that will enhance IMED's project monitoring capacity, especially using modern information and communication technology.

36. The IMED led verification process will be supported by an independent technical agent(s). One or more technical universities will act as independent agent(s) providing technical backstopping to the division. Funding from a trust fund has been received and this fund will be used for detailing the concept, including the step-by-step process for the verification of DLIs. Roles that bi-lateral donors, including Danish International Development Agency, might play, including providing technical assistance in the verification process, will also be explored during the process. The outputs will include dossier templates for verification and the terms of reference for the independent technical agents. Adequate financial provisions have been kept in the operation that will enable the IMED in hiring technical universities (using the direct selection method) and to cover other related costs including logistical arrangements. The LGED will sign a memorandum of understanding with the IMED regarding this once the operation becomes effective.

E. Institutional Strengthening and Capacity Building Component

37. The institutional strengthening and capacity building component will be funded from the IPF instrument. This component will complement the capital expenditures that will be made using the PforR financing instrument. The operation design has considered three options before concluding on this component approach and expenditure details. The options and justifications for the selection preferred option are provided below.

i. *No separate IPF component*. All operation support, institutional strengthening and capacity building activities are included as part of the PforR. This could have been the best option. However, experience, especially from Nepal Bridges Improvement and Maintenance Program or BIMP (P125495), shows that the Government often gets overwhelmed in tackling some of the requirements on its own. Support from the Association is necessary for tackling some of the issues that are important from Program's sustainability, integrity and governance viewpoints. This option is rejected for these reasons;

ii. *Full support under the IPF.* This option is rejected based on two considerations: Program's sustainability and from activity management perspective. An analysis suggests that full support under the component would have involved many activities – administrative, technical and contractual – which would have incurred high transaction costs plus administrative burdens; and

iii. *A mix of support under the Program and the IPF component.* This is the chosen option. This strikes the right balance between two other options. Component activities were chosen based on several criteria: (a) activities that are fundamental to Program's integrity and governance; (b) activities that are essential for Program's sustainability; (c) activities that have impact not only on the Program, but also have impact on LGED-wide processes; (d) activities that are crucial for the achievement of Program DLIs, PAP and aid in the adoption of modern bridge technology. Annex 4 provides details of the analysis in choosing the component activities.

38. The component consists of following activities:

(a) Provision of technical assistance for supporting Program implementation, including, among others: (i) provision of technical assistance for the Program coordination, monitoring, planning, design and other technical areas; (ii) provision of technical assistance for the carrying out of bridge asset management activities, including RuBIMS; (iii) provision of technical assistance for the carrying out of integrated technical audits (technical, fiduciary and environmental and social) of rural bridges; (iv) provision of technical assistance for the carrying out of the procurement, financial management, and internal audit sections of the Program; and (v) provision of technical assistance for the monitoring and training on labor influx, occupational health and safety issues at construction sites, including labor rights, gender based violence and citizen engagement issues; and (vi) provision of technical assistance for the carrying out of the verification of DLIs;

(b) Provision of technical assistance for strengthening and building Program institutional capabilities, including, among others: (i) building capacity of LGED staff to handle Program-related technical, fiduciary and environmental matters, including technical design and maintenance, adaptation to climate change and disaster, and grievance redressal matters; (ii) strengthening of information communication technology and monitoring information systems of the Program; and (iii) building capacity of LGED staff to carry out Program communication, branding and outreach activities; and

(c) Provision of technical assistance for, among others, feasibility and analytical studies related to potential transport operations, including associated gender, social, environmental and occupational health and safety issues.

39. The Association will fully fund the IPF component. The total allocation for the component is US$32 million (Table 6). Furthermore, additional to this component activities, the Government will shoulder considerable Program implementation cost burdens. They include officers pay and allowances, administrative expenses, petrol, oil and lubricants, training activities (both local and foreign), travel expenses, and survey and consultancies. These costs are estimated at US$46 million. However, these expenditures are not earmarked against the Government as they are estimates only.

40. The component will be implemented as per the World Bank's IPF policy and regulation. The related policy and regulation are: (a) Bank Policy, Investment Project Financing (November 10, 2017); (b) Bank Directive, Investment Project Financing (November 10, 2017). Details of the implementation, safeguards, financial management and procurement arrangements are provided in Annex 4.

Table 6. IPF Component Financing (US$, millions)

Item	Total Costs	Contribution	
		GoB	IDA
Support for Program Implementation	23.00	0.00	23.00
Institutional Strengthening and Capacity Building	9.00	0.00	9.00
Grand Total	**32.00**	**0.00**	**32.00**

F. Lessons Learned and Reflected in the Program Design

41. Important lessons learned from a similar PforR operation in South Asia are embedded in the Program. The bridge PforR operation in Nepal BIMP (P125495) has provided some insights on how the effectiveness of the PforR instrument could be enhanced and what factors could affect a PforR operation negatively. Furthermore, the Program design has incorporated main lessons learned from many years of Association's engagement in the rural transport operations with the LGED. Table 7 describes how BIMP and LGED lessons learned are incorporated in the Program design.

Table 7. Nepal BIMP Lessons Learned and Program Design

Main Lessons	How Are They Incorporated in the Program Design?
BIMP Lessons	
Implementation agency's experience of working with the World Bank is crucial in choosing the PforR instrument.	The proposed implementation agency (LGED) has been chosen given its long (over 28 years) experience of working with the World Bank and is currently implementing three projects (Section III-A).
Program's political economy is important.	Political economy analysis was conducted during the Program preparation and main recommendations incorporated in the Program design (Section IV-C).
Client program needs clear understanding.	Detailed analyses of the client program and the Program requirements were conducted (Section II-A).
Necessity of expenditure tracking	Measures taken that will facilitate the expenditure tracking (Section II-C and the Program Action Plan [PAP])
Importance of achieving some milestones before the Program inception	RuBIMS is being piloted and will be the mainstay of the Program's governance. The site monitoring application is being finalized and will aid in project monitoring, especially quality monitoring (Section III-B).
Importance of limited number of DLIs	Program has only eight DLIs (Section II-D).
Importance of procurement and quality monitoring capacity of the implementing agency	Measures incorporated in the Program (Section IV-B and Section II-E)
Clear understanding on the part of the client on PforR requirements	The client was fully involved in the Program design. PforR concept and requirements were presented to the client.
Importance of OHS in the Program and challenges of operationalization of Grievance Redressal System (GRS)	The Program plans to tackle OHS and GRS issues comprehensively (Section IV-C).
LGED Lessons	
Governance is one of the key challenges being faced in LGED projects	Program DLIs and PAP actions are designed to tackle these governance challenges

Main Lessons	How Are They Incorporated in the Program Design?
The quality of physical works is a major issue in many of the LGED operations	The Program has incorporated measures to ensure quality of bridgeworks. For instance, the Program has made a provision for comprehensive technical audits.
Although the LGED manages environmental and social risks in a DP assisted projects well, there are improvement scopes of managing risks in government financed projects. Also, LGED does not have the adequate institutional capacity to manage these risks.	ESSA has identified the environmental and social risks and the Program has taken measures to mitigate them including the strengthening of institutional capacity in environmental and social risk management areas. The Association will also monitor the implementation of the risk mitigation measures, as part of its regular project supervision activities, especially the development and use of environmental and social instruments as defined in the Environmental and Social Management Framework (ESMF).
There are scopes for improving LGED's capacity in contract planning and contract management areas that will help avoiding implementation delays and cost overruns	The formulation and updating of Program procurement strategy is one of the PAP actions. Also, one of the DLIs (DLI-7) is designed to address the contract management related weaknesses.

III. PROGRAM IMPLEMENTATION

A. Institutional and Implementation Arrangements

42. The LGED will implement the Program. The department's main mandate is the development of rural infrastructure, including transport infrastructure, in Bangladesh. The LGED has a long track record of working with DPs. Out of the LGED's current 130 projects, many are DP supported. The LGED's current Annual Development Program allocation (FY2017–2018) is well over US$1,300 million, which is a tenth of the total program allocation.

43. The LGED has extensive experience of working with DPs. The DPs that are currently working with the LGED include both the bilateral and multilateral agencies. The LGED's project/program planning, implementation, and M&E capacities have improved significantly since its creation in the mid-1980s. The LGED has developed a reputation as one of the few public sector organizations with noteworthy project implementation capacities. In the last five years, the LGED has used almost all its annual budget allocations.

44. The LGED's institutional arrangement has been found to be most suitable for implementing the proposed operation. This is because the nature of the Program (mainly small interventions spread over the whole country) requires heavy field presence. Roughly 95 percent of the LGED's staff positions are sanctioned against field offices,[10] either in *upazilas* or district offices. However, the LGED is yet to streamline its bridge design, construction, and maintenance activities. An analysis suggests that the department needs to make central-level adjustments, amongst others, to streamline activities in the abovementioned areas. Furthermore, the LGED will be needed to outsource some of the Program-related activities for achieving the Program objectives fully.

45. The other eight government entities will play noteworthy/complementary roles in supporting the operation. Table 8 summarizes their roles. LGED headquarters will be responsible for coordinating with these entities. Field offices may be approached by them only if operational requirements dictate such an involvement, with full knowledge of the headquarters.

[10]According to the approved organizational setup: headquarter level - 219, division level - 60, regional level - 140, district level - 1,282, *upazila* level - 9,279, and deputation reserve - 204, total: 11,184.

Table 8. Summary Roles Other Institutions Supporting the Operation

Institution	Main Role
1. LGD, Ministry of Local Government Rural Development, and Cooperatives	• Operation oversight being the LGED's parent ministry
2. Planning Commission	• Operation appraisal and approval
3. IMED	• DLI verification
4. Central Procurement Technical Unit	• Oversight function of application of procurement legislations and management of e-GP portal
5. Ministry of Finance (MoF)	• Operation budget allocations and fund release
6. Economic Relations Division	• Liaison with the World Bank
7. Comptroller and Auditor General (C&AG)	• External audit of the operation, both PforR and IPF components
8. Anticorruption Commission	• Corruption prevention and investigation and prosecution

46. The operation will be led by a program coordinator. The additional chief engineer (maintenance, asset management and road safety) will be the program coordinator. 61 district-level executive engineer offices will be mainly responsible for the field-level implementation. These executive engineer offices will be responsible for the procurement, contract and quality management, contractor's payment settlement, monitoring and reporting. These offices will be supported by 466 *upazila* engineer offices. The *upazila* engineers will act as project managers for contracts under their jurisdiction. Other field-level offices (additional chief engineer and superintending engineer offices) will provide necessary Program implementation oversight. Several other units/sections (for example, procurement unit, audit unit, quality control unit) will play key supporting roles in the Program implementation, monitoring, capacity development, and quality assurance. The Program Operations Manual (POM) will provide details on roles played by the different LGED offices (headquarters plus field) in the implementation of the operation. A program steering committee will be established in the LGD, chaired by the LGD Secretary, including representatives from the MoF, among other agencies, to provide overall guidance and policy directions. The program coordinator of SupRB will provide secretariat services to the committee.

47. The operation will create 20 new headquarters-level positions to strengthen LGED's institutional capacity. These positions are: an additional chief engineer, superintending engineers (3 nos.), executive engineers (six nos.), a senior social scientist, senior assistance engineers (2 nos.), and assistance engineers (7 nos.).

48. The operation will make an effort to address LGED's key weaknesses to mitigate against major Program risks. The LGED's weakness areas with regard to rural bridges include: (a) inappropriate and inadequate asset management approaches, including planning, programming, implementation, monitoring, and technology areas of bridge maintenance; (b) absence of accurate and complete information on rural bridges for informed development and maintenance decision making; (c) lack of institutional framework for planning, design, implementation, and management of rural bridges; and (d) weaknesses in managing social and environmental, fiduciary, procurement, and fraud and corruption risks.

B. Results Monitoring and Evaluation

49. A web-based RuBIMS, developed for the first time in Bangladesh, will be the main instrument for monitoring Program's progress and governance issues. Box 2 provides details of the technical features and capabilities of the system. Another Association-funded project (RTIP II) has been providing funding for the development of the system. The system will be able to generate information for monitoring all the Program's development indicators barring one: Results Area 4 (institutional capacity and other).

Box 1. RuBIMS: Technical Features and Capabilities

RuBIMS is designed to be a comprehensive system for collection and maintenance of rural bridge data and for aiding informed rural bridge decision making. It has a smartphone cum tablet-based interface that facilitates collection of bridge data. Apart from facilitating capturing of rural bridge data, the system is also capable of suggesting the type of intervention (for example, type of maintenance) that a bridge will require and produces a list of prioritized bridges under different intervention types. The system uses a detailed algorithm in deciding the intervention types and on bridge prioritization. The prioritization process uses several economic, social, and transport criteria, which are vetted by the LGED's top management.

Once it is fully developed, populated with bridge data, and synchronized with the GIS, RuBIMS will be able to provide information on: (a) spatial location and physical characteristics of rural bridges (for example, location, total length, bridge type); (b) construction and maintenance history details (for example, date constructed/maintained, intervention type); (c) data collection history (for example, date of collection dates); (d) required type of maintenance intervention; and (e) a prioritized list of bridges with recommended interventions. The tool will also be able to provide other supplementary information, if required. For instance, the tool, in conjunction with the available spatial information, will be able to calculate the network redundancy or efficiency information (for example, potential detour time if a bridge is out of service or potential improvement of network efficiency if a bridge is built).

50. RuBIMS is in its final stage of development. The beta version of this software is already available and the testing is ongoing with field data. The LGED now plans to train its field officials on data collection using RuBIMS with support from consultants. Subsequently, LGED *upazila* offices will collect field data of rural bridges in their respective jurisdictions. It is expected that the system will be up and running by September 2018. The system is being integrated with the Road and Structure Database Management System (RSDMS) to further strengthen the integrity of collected bridge data.

51. The Program also plans to use yet another tool, also developed under the aegis of RTIP II, for field inspection and monitoring progress of the Program's work contracts. The use of this application will have several advantages over the traditional field monitoring and reporting system: (a) the inspection and monitoring regime will be more efficient as the officials will no longer be required to write a separate report; (b) the supervising officials will be able to monitor the field inspection and monitor the related proactiveness of officials reporting to them; reports will be generated at the end of each year summarizing information captured by the application during field inspections; (c) the field officials will be more accountable as the software-generated data can be used for establishing accountability should such requirement arise; and (d) higher-level officials will be able to establish the updated progress and issues of a subproject on a real-time basis. The application is now being integrated with the Electronic Project Monitoring System (ePMS), developed by the LGED with support from the Association-funded RTIP II.

52. The LGED has developed a Unified Financial Management System (uFMS) with support from RTIP II. The uFMS is developed primarily to support DP-funded projects. All Association-supported projects have been using the uFMS for their financial management. The system can generate financial reports in line with the Association's requirements. The operation plans to provide further support for the customization, training, and maintenance of uFMS and convert it into a web-based application. The RTIP II-supported systems, mainly uFMS (or an upgraded version of uFMS) and the ePMS, will be used in the generation of the operation's progress reports including interim un-audited financial reports (IUFR) for the IPF component.

Box 3. Field Inspection and Progress Monitoring System

The LGED has developed a tablet/smartphone-based field inspection and monitoring system application. As the name suggests, the application will help the LGED in field inspections and progress monitoring of ongoing contracts. The application has several important inspection features: (a) the application is able to establish the identification of inspecting officials as it requires mandatory login information (an unique identification number and a password); (b) it is capable of capturing videos/photos of the worksites and establishing the spatial locations of inspected sites;

(c) in case of Internet non-connectivity, the application is able to capture off-line data and allows the subsequent uploading of data; (d) collected data can be integrated with the LGED's main ePMS; and (e) a comprehensive field visit report can be produced by the system.

C. Disbursement Arrangements

53. The two operation components will use two different disbursement procedures given the use of a "hybrid" financing approach. While this section only deals with the PforR component's disbursement procedure, Annex 4 provides IPF component's disbursement procedure. PforR component's disbursements will be linked to the achievement of the DLIs. Annex 2 provides the list of DLIs, maximum amount that can be disbursed against each of the DLIs, and the protocols for their verification. The operation implementation period is five years and within this period the operation is expected to disburse up to an amount of US$393 million (SDR 280.44 million) under the PforR component. Given that the first five DLIs (DLI-1 to DLI-5) are fully scalable, disbursements will be made based on the extent of targets they achieve. The DLI targets are specified as the cumulative number of meters completed for either maintenance or new construction activities. A bridge will only be counted toward the target if the physical works are fully completed. Partial completion of a bridge will not count toward the target. The Program design has estimated some DLI values to be achieved each year during the operation implementation period. These values are set considering that the momentum will be gained progressively in certain parts of the Program. Several strategies are considered while setting the targets: (a) the Program will mainly concentrate on the implementation of the bridge maintenance and rehabilitation activities in its initial years; (b) preparatory activities will dominate capacity expansion, replacement, and new construction of bridges in the initial years and subsequently they will be constructed later in the Program. However, it should be noted that these targets are only notional. The Program will disburse against the achievement of DLI targets anytime within the Program period. This means, if the Program fails to achieve a DLI target in any year, the related disbursement amount will be rolled over to the next year. If the Program consistently overachieves its targets, the credit/loans could be fully disbursed before the formal end of the operation.

54. The remaining three DLIs (DLI-6 to DLI-8) are process DLIs. Two of these DLIs, DLI-6 on implementation of RuBIMS and DLI-8 on transparency and accountability, are 'all-or-nothing' targets. DLI-7 on improvement of contract and financial management systems is scalable, barring an item of the same DLI that deals with the financial management, which is an 'all-or-nothing' target.

55. The LGED will prepare dossiers of DLI achievements in specific formats. The dossiers will contain all information as elaborated in the verification protocol (Annex 2) for facilitating the verification process. The department will hand over the dossiers to the IMED for verification of results. The LGED can submit a verification request as many times as it wants. However, for the sake of efficiency, it is expected that the verification request is submitted within a time frame that will facilitate the process of verification between the months of June and August in a year. This will help in making disbursements in end-September, which is the start of the construction season.

56. The Government may request an advance not exceeding SDR 70.125 million of the PforR World Bank financing amount as per the World Bank's PforR Financing Directive[11]. Such an advance is needed to improve the financial liquidity of the Government to mitigate risks of non-achievement of results due to a shortage of Program funding. The advance will be made only when the operation becomes effective and one of the legal covenants linked to the POM is met. The Program will maintain the same level of advance throughout its duration. This means that any recommended disbursement amount will be adjusted

[11] The World Bank. "Program for Results Financing: Bank Directive." The World Bank, March 02, 2018

against the advance and subsequently disbursement will be made to maintain the same level of advance. At the end of the Program period, a reconciliation will be made and the Government will refund to the Association any amount that could not be adjusted against DLI achievements. These arrangements will ensure that the Program does not suffer from implementation delays because of a shortage of funds. No results before the signing of the Legal Agreement between the Association and the GoB are expected under the Program.

57. The institutional development and capacity building component will follow the disbursement procedures of an IPF operation. Report-based disbursements using the interim unaudited financial reports will serve as the basis for withdrawal of funds from the IDA Credit.

IV. ASSESSMENT SUMMARY

A. Technical

58. The Bangladesh Rural Bridge Program has considerable strategic importance for Bangladesh. Rural bridges play a key strategic role in Bangladesh's development. This is because they provide connectivity in remote rural areas of Bangladesh, where the majority of poor people live. The rural road network is the lifeline of Bangladesh and is identified as one of the factors that substantially helped the country's development in the past by narrowing gaps between urban and rural areas. Rural roads cannot function effectively without gaps on them bridged and existing bridges being structurally sound and safe for vehicles using them. An efficient rural roads network plays an effective role in improving rural livelihoods as it provides the much-needed access to social, economic, and life-enriching activities and services. The development and maintenance of UZRs and UNRs, including bridges, has been identified as one of the strategic priority areas in the Seventh Five-Year Plan of the country.

59. A dedicated Program for addressing the construction and maintenance of rural bridge issues is technically sound. Although bridges are important for the optimum functioning of the rural road network, issues linked to their development and maintenance are addressed in a piecemeal manner. The maintenance of roads gets overwhelming priority in the government's ongoing roads and bridge maintenance program. Maintenance of bridges is only considered when they are on the verge of collapse. Rural bridges are, generally, constructed as a part of road projects/programs and sometimes their selection is influenced by non-objective criteria. Rural bridges require immediate attention given that a significant portion of their substantial asset value could be lost if no action is taken for their maintenance and rehabilitation. Current information suggests that two-fifths of rural bridges need major maintenance and a quarter of them either need to be rehabilitated or be replaced. Finally, planning, design, construction, maintenance, and management of bridges require different technical expertise than for roads. Currently, there is a shortage of bridge-related expertise in the LGED.

60. The LGED is the right organization for implementing the proposed Program. The institutional structure of the LGED, with overwhelming majority of field-based staff, is most suitable for the implementation of such type of operation. Section III-A provides details of the Program implementation arrangements. As mentioned before the LGED to create 20 different headquarters-level new positions, including the position of an additional chief engineer, to mitigate to strengthen its rural bridge-related planning, implementation, and management capacity.

61. The Program will follow the prevailing budgeting system and process similar to other projects/ programs. The Program's financial allocations will be reflected in the annual budget and in the annual development program of the Government. The current budget structure and classification system of the Government is sufficient to track any project or program expenditures. The Program expenditures can easily be included in the projected Medium-term Expenditure Estimates Framework fiscal space of the LGED. As

mentioned before, the Government will create two separate economic codes for supporting bridge development and maintenance activities.

62. The LGED is currently using "AASHTO LRFD[12] Bridge Design Specifications, fourth Edition (2007)" for design and evaluation of rural bridges. The bridge loading[13] considers AASHTO-LRFD and Bangladesh National Building Code (BNBC). "Building Code Requirements for Structural Concrete (ACI 318-14)" and "ASTM[14] C 494 Standard Specification for Chemical Admixtures for Concrete" are also used as references. The LGED follows the 'Road Design Standard' introduced by the Planning Commission of Bangladesh in 2004. Furthermore, the LGED plans to adopt "AASHTO LRFD Bridge Design Specifications, sixth Edition (2012)" in the next few months. The new specifications are expected to enhance the safety, serviceability, constructability, bridge aesthetics and overall economic life of rural bridges. For designing rural bridges, the LGED is now focusing more on location, length, waterway area, hydrologic and hydraulic (stream stability, bridge waterway, foundation, roadway approaches etc.) analyses and roadway drainage system. Moreover, the LGED is also practicing additional design consideration for rural bridges in 19 coastal districts. This is mainly to address different climate change impacts including sea level rise, coastal inundation, tidal flooding, salinity intrusion, cyclone and storm surges. Recently the LGED has taken a decision to use higher strength marine concrete in coastal districts (minimum compressive strength concrete will be raised to 30 Megapascal from current strength of 25 Megapascal). It is to be noted that approximately 40 percent UZR and UNR bridges under the Program are in these coastal districts. Therefore, the Program is expected to substantially contribute to the implementation of the one of the four pillars of the GoB's 2009 climate change adaptation strategy (see section IV-C for further on the strategy elements).

63. The LGED needs to look at alternatives to traditional multi-span, shorter length reinforced cement concrete T-beam bridges. The alternatives may include prestressed concrete and network arch bridges. These alternatives will help increase the span size of bridges and thereby reduce the necessity of piers in the middle of channels, which will help reduce negative environmental impacts and improve climate resiliency of bridges. Moreover, there is significant scope to improve the LGED's bridge maintenance technology, including the use and introduction of many modern bridge maintenance methods, including the use of high-strength materials (fiber-reinforced polymer or carbon fiber). There are also capacity issues in quality management, both in the consultancy industry and within the LGED. The institutional development and capacity building component has kept adequate provisions to address the technology and quality management issues.

64. The Program DLIs are designed to help achieve Program outputs and strengthen the business processes. The business processes include technical, procurement, and fiduciary systems, as well as transparency and accountability of the proposed Program. The DLI design process involved the adoption of several strategies, including the following: (a) DLI numbers are kept at a minimum; (b) chosen DLIs can contribute directly to the achievement of the PDO; (c) some chosen DLIs are crucial for the Program's long-term sustainability, as well as transparency and accountability; and (d) the chosen DLIs are scalable to improve the Program's flexibility, unless the nature of a DLI requires a non-scalable solution. The proposed Program has eight DLIs. The first three DLIs are linked to physical outputs and the remaining

[12] AASHTO - American Association of State Highway and Transportation Officials; LRDF - Load and Resistance Factor Design

[13] Vehicular Live Loading: AASHTO HL-93; Wind Loading: AASHTO-LRFD but wind speed considers BNBC (latest); Seismic Loading: AASHTO-LRFD but seismic zone coefficient BNBC (latest); Other Loading: According to AASHTO-LRFD.

[14] American Society of Testing and Materials

three are process DLIs. All three physical DLIs are scalable. The remaining three are all-or-nothing DLIs, barring one DLI (DLI-7), which is partially scalable.

65. A sample of bridges was used for the economic analysis of the Program. These bridges include those which require minor and major maintenance, rehabilitation and widening/capacity expansion, replacement for those that are beyond their service lives, and new bridges that are required for bridging existing gaps. The analysis included a total of 38 bridges (total length of 1,170 m), 6 from each of the bridge categories, except replacement activities with 8 bridges. The technical assessment report provides the details of the economic analysis.

66. The economic analysis adopted a partial equilibrium approach. This means that it only considered a portion of accrued overall benefits from the interventions. Vehicle operating costs and time cost savings are the two benefit types included in the analysis. The analysis results show a high rate of return, particularly for new construction and capacity expansion interventions (see Table 9 for summary results and technical assessment report for details). However, approximately a third of the bridges that underwent economic analysis have an economic rate of return below the threshold value of 12 percent, with a half of the bridges for new construction. When the investments are grouped, the overall economic indicators have been found to be attractive. Taking 38 bridges together, the overall economic rate of return has been estimated at just over 25 percent. The ratio of net present value (NPV), at a discount rate of 12 percent, to capital expenditure and benefit-to-cost ratio have been estimated at 0.19 and 2.8, respectively. The sensitivity analysis using the 'switching values' shows that the rate of return on investments is robust. This means that the economic case underpinning the Rural Bridge Program could withstand considerable uncertainties in appraisal assumptions.

Table 9: Summary Economic Evaluation Indicators and Switching Values

Indicator	Switching Value
Economic internal rate of return	25.2 percent
NPV	US$9,281 million
Financial capital cost (CAP) US$, thousands	US$48,957 million
NPV/CAP	0.19
Benefit-to-cost ratio	2.8
Switching value of costs	179%
Switching value of benefits	–64%

67. The analysis did not attempt to calculate wider social and economic benefits associated with the Program's bridge interventions. There has been overwhelming evidence of wider socioeconomic benefits from rural road investments in Bangladesh. A 2006 World Bank Policy Research Working Paper,[15] which used the results of an analysis of the household-level panel data collected as a part of the impact assessment of a World Bank-supported project (Second Rural Road and Market Improvement and Maintenance Project), confirmed the overwhelming wider impact of road infrastructure investments in Bangladesh. This paper concluded that rural road investments are found to have significant poverty reduction impact through higher agricultural production, higher wages, lower input and transportation costs, and higher output prices. Rural road investments also lead to higher girls' and boys' schooling. The paper concluded that the road investments are pro-poor, meaning that gains to the poor are proportionately higher than for the non-poor.

[15] Khandkar, S. R., Z. Bakht, and G. B. Koolwal. 2006. "The Poverty Impact of Rural Roads: Evidence from Bangladesh" World Bank Policy Research Working Paper 3875.

B. Fiduciary

68. A fiduciary system assessment has established the Program fiduciary risk as 'Substantial'. The assessment was carried out according to the World Bank's PforR Financing policy (November 2017). The objective of the assessment was to determine whether the Program systems provided reasonable assurance that the financing proceeds would be used for intended purposes. Furthermore, the assessment has also considered fraud and corruptions risks and their potential mitigation measures. The fiduciary systems assessment report provides details of the fiduciary system assessment.

69. The legal and regulatory framework for the proposed Program's fiduciary systems appears to be comprehensive. The framework is in line with international principles and standards for public procurement and financial management. Nonetheless, the assessment has identified a few deficiencies in the current systems and procedures. They include: (a) insufficient capacity in preparing financing statements accurately and on time, (b) delays, often faced, in carrying out result-based program audits, (c) slow budget release at the initial stage of the financial year, (d) slowness in adjusting advances, (e) delays in making payments to contractors, (f) inadequate record keeping, (g) low capacity of the internal audit department and delays in taking actions on external audit observations, and (h) the absence of strict computer controls in the overall financial management operations.

70. In addition, there are several procurement-related shortcomings. They include: (a) ineffective contract management resulting in time and cost overruns; (b) absence of strategic procurement analysis and planning to determine the optimum procurement package size, procurement method, contracting modality, and duration of the contract; this leads to non-attainment of the development outcomes within optimum cost and time; (c) provisions in the procurement laws and regulations that are not consistent with international good procurement practices and the spirit of the open tendering method; for instance, tenders are invited or rejected based on percentage above or below the estimated cost, use of lottery systems, and so on; and (d) inadequate complaint handing system to register procurement-related complaints and monitor their resolution status.

71. The normal government budgeting process will determine the Program's fund allocations and expenditures. Program funds will be directly disbursed to the Government's treasury (in BDT or any other currency (ies) requested by the Government) upon achievement and verification of results. The CGA will be responsible for maintaining the program accounts and reporting through iBAS/iBAS++[16] systems. All entities using Program funds will be subject to statutory audits and the LGED will be responsible for maintaining expenditure accounts and ensuring timely expenditure reporting.

72. The Office of the C&AG will carry out the Program audits. The FAPAD, under C&AG, will coordinate with the Works Audit Directorate or any other relevant directorate to complete audit of both development and nondevelopment expenditures. The audit report will be submitted to IDA within nine months from the end of the fiscal year. Currently there are no overdue audit reports under the implementing ministry.

73. The Program will only support eight expenditure items. Following codes are included in the Program: 3211107 (hiring charges), 3211123 (rental of other assets- vehicle), 3231201 (domestic training), 3231101 (foreign training), 3257101 (consultancy-firm), 3257104 (survey), 3258111 (repair and maintenance – bridges) and 4111303 (bridges – replacement and new construction). An expenditure reconciliation will be made at the end of the Program, which will decide whether a refund is necessary or not. The program will exclude any high-value contracts under different procurement categories. They are: (i) works, estimated to cost US$50 million equivalent or more per contract; (ii) goods, estimated to cost

[16] Integrated budget and accounting system.

US$30 million equivalent or more per contract; (iii) non-consulting services, estimated to cost US$30 million equivalent or more per contract; and (iv) consultants' services, estimated to cost US$15 million equivalent or more per contract. A few allowable practices under the current Public Procurement Act 2006 and Public Procurement Rules 2008 will not be permitted under this Program. They are: (a) bids invited or rejected on percentage above or below the estimated cost, (b) contracts awarded using a lottery system, and (c) bids awarded disregarding tenderers' qualification/experience requirements.

74. The World Bank's Guidelines on Preventing and Combating Fraud and Corruption in Program-for-Results Financing, dated February 1, 2012, and revised July 10, 2015, will apply to the Program. The Government will use its own country systems to take appropriate measures to prevent fraud and corruption connected with the program and to remedy or prevent its recurrence. If specific instances of fraud and corruption are identified, it will be reported to the Anticorruption Commission. The commission will take necessary actions for investigations and prosecutions in accordance with Bangladesh's laws and regulations. The LGED will develop a comprehensive GRS that will allow receipts and resolution of complaints (see Section IV-C for details). The Government will use the World Bank's easily accessible procurement debarment list before awarding contracts. Moreover, information on allegations of fraud and corruption in the Program will be shared with the World Bank.

75. The Program has incorporated a few fiduciary and procurement risk mitigation measures. They are either incorporated as DLIs or activities under the PAP. The verification protocol of the Program DLIs also incorporated conditions to avoid funding bridgeworks that are not consistent with regulations, international good procurement practices, and the spirit of the open tendering method.

76. An integrated technical audit of the Program will be carried out. The integrated technical audit will examine the adherence of the Program to the technical, procurement, and social and environmental standards and guidelines. The audit will be carried out on a sample of Program contracts. The LGED will employ a consulting firm for this purpose and audit reports will be shared with the Association.

77. The IPF component of the operation will follow a different procurement framework. The World Bank's 'Procurement Regulations for Borrowers under Investment Project Financing'", dated July 1, 2016 (Revised November 2017) (Procurement Regulations), will be applied for all procurements under the institutional development and capacity building component (IPF component). A Project Procurement Strategy for Development has been prepared by the LGED for this component, with support from the World Bank. Several factors have been considered while developing the strategy, including the nature of the procurement activity, organizational capacity of the organization, prevailing market conditions, and activity level risks. As part of the project preparation activities, a Procurement Plan for the IPF component has also been developed. Furthermore, Systematic Tracking of Procurement Exchanges system (commonly known as STEP) will be introduced to manage the Procurement Plan and procurement transactions under the IPF component.

C. Environmental and Social Effects

Environmental and Social Systems Assessment

78. An Environmental and Social Systems Assessment (ESSA) was carried out during the preparation in a manner consistent with the World Bank PforR Financing policy (November 2017). Key national and local stakeholders were consulted during the assessment process. Two dedicated consultation meetings were held in two *upazila*s to discuss the draft findings and recommendations of the assessment. They

helped in the updating of the ESSA. It has also been disclosed locally and through the World Bank's external website.[17]

79. Program activities will have two restrictions, judged from the environmental and social risk perspective. They are: (a) bridge construction and maintenance activities that have significant and irreversible social and environmental consequences and (b) construction of bridges in environmentally sensitive areas (for example, government-listed national parks and conservation areas).

80. The ESSA has concluded that the Government's environmental and social policies, legislations, program procedures, and institutional systems are broadly consistent with the elements of six core PforR financing principles[18]. Nonetheless, there are gaps that need to be bridged to mitigate the Program's social and environmental risks. The PAP has included actions that are required for managing the social and environmental risks and impacts. Also, the POM will include specific activities to be undertaken for mitigating the Program's gender and social risks. The LGED will submit a dossier or summary information in a form acceptable to the verification entity, for each bridge as part of the verification process. The bridge dossiers will include actions undertaken to mitigate social and environmental risks and impacts.

81. The Program will encounter several environmental risks. They will mainly originate from bridge construction activities. They include: (a) pollution (air, dust, noise, surface, and groundwater); (b) waste generation (solid and liquid); (c) drainage congestion (from construction debris, encroachment of water bodies, and diversion road over canals); (c) road traffic congestion from restricted traffic movement; and (d) effect on aquatic flora and fauna, including fish. Construction activities may also cause a constriction in flow of water, although its effect is likely to be within the bridge vicinity. A loss of benthic flora and fauna is expected due to the potential sand and gravel extraction and foundation works, which is reversible and expected to be temporary in nature.

82. The anticipated adverse environmental effects of the Program are expected to be insignificant. Reasons include: (a) the limited geographic footprint of planned works; the Program plans to construct/rehabilitate small- to medium-size bridges; (b) the repair and maintenance works will be incremental to existing structures; (c) Program activities will not be allowed in sensitive biodiversity areas; and (d) adverse environmental effects of bridgeworks are likely to be temporary in nature, which can be addressed through already available and tested mitigation measures.

83. The ESSA has identified several social risks. Activities linked to the rehabilitation and replacement of existing bridges and construction of new bridges will mainly be responsible for these risks. The potential impacts may comprise the following: (a) involuntary resettlement of affected people from land required for the construction of new bridges and replacement or capacity expansion of existing bridges; (b) loss of business income and sources of livelihoods and employment; (c) temporary disruption in normal flow of traffic that might affect all types of travelers, including vulnerable and physically challenged groups; and (d) adverse social and economic impact on the local communities from influx of nonlocal laborers at bridgework sites. These impacts could effectively be mitigated with forward planning and devising appropriate mitigation measures. Also, adverse social impacts are expected to be directly proportional to the size of the bridgework and the work duration. The LGED envisages designing widening/replacing of existing bridges avoiding any acquisition of land and displacement of people. However, some new bridges

[17] http://documents.worldbank.org/curated/en/326251524258785715/pdf/SUPRB-ESSA-QER-April-12-2018.pdf.
[18] These principles are designed to maximize potential environmental and social benefits while avoiding, minimizing, or otherwise mitigating environmental or social harm.

and capacity enhancement of the existing bridges may involve involuntary acquisition of private lands in a minimal scale.

84. The ESSA has recommended several measures for mitigating social and environmental risks. Annex 3 provides details of the risks and related mitigation measures. The PAP also includes an activity that is designed to mitigate against inadequate institutional capacity for managing Program's social and environmental risks.

Grievance Redressal

85. The LGED will implement the Government's October 2015 directives to develop a comprehensive departmentwide GRS. Section IV-C provides details of the system. The GRS will provide opportunities for entry at multiple levels (Program, *upazila*, district, and central) using different entry methods (for example, Internet, paper complaints, verbal complaints). The activities will involve the development of customized LGED GRS guidelines following Government guidelines, and the development of an LGED GRS portal for lodging LGED-specific grievances, the design of which will be similar to the one available at www.grs.gov.bd.

86. Communities and individuals who believe that they are adversely affected because of a Bank supported PforR operation, as defined by the applicable policy and procedures, may submit complaints to the existing program grievance redress mechanism or the WB's Grievance Redress Service. The service ensures that complaints received are promptly reviewed in order to address pertinent concerns. Affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service, please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Citizen Engagement, Transparency, and Accountability

87. Several opportunities and constraints exist in the Program to ensure citizen engagement. The opportunities include increased public attention to bridge maintenance. The Government has undertaken the rural transport infrastructure maintenance as a policy priority, according to the Seventh Five-Year Plan. Furthermore, the Government has also committed to redressing grievances. Guidelines for redressing grievances have been issued by the Government. A dedicated website is now available for the public to lodge complaints (www.grs.gov.bd). The Program has several limitations that limit the operationalization of extensive citizen participation in the planning, design, and implementation of the Program. The Program has a wide geographical spread and will have numerous contracts ranging from small-size minor maintenance to medium-size new bridge construction contracts. These issues pose operational constraints in citizen engagement. Also, citizen engagement in a project or program to ensure transparency and accountability is, often, regarded as inviting 'public nuisance'. In many cases, the project/program implementers perceive citizen engagements as ineffective and feel that they add an extra layer of rent seekers. The citizen engagement measures were designed considering these opportunities and constraints.

88. The Program's political economy analysis has identified a few political economy risks. They include undue interventions from different quarters in the bridge selection process (especially for new bridges), in the bidding process, and in undermining citizen engagements to reduce the Program's transparency and accountability to protect vested interests. Also, there are several current issues, which if not addressed, might undermine the Program's transparency and accountability. They include the lack of

adequate process for the collection, preservation, and sharing of rural bridges information; apparent citizen apathy toward infrastructure maintenance (for example, bridge maintenance); and ad hoc nature of civil society engagements in many projects for improved transparency and accountability.

89. The citizen engagement measures are designed based on several strategies. The strategies include: (a) maximizing the use of technology while designing the measures; (b) maximizing the use of electronic and print media to facilitate the engagement of citizens; (c) recognizing limitations that the Program poses in designing these measures; and (d) being proactive on the part of the Program management.

90. The following measures have been devised for effective citizen engagement to foster Program transparency and accountability:

(a) *Sensitization of the key stakeholders.* The Program will arrange a high-profile 'launching ceremony' at the Program inception for dissemination of the Program's objectives and main features. Key project stakeholder, including high-level politicians, senior government officials from key Program ministries, agencies, and institutions, including the Anticorruption Commission; representatives of the civil society organizations, press, and media; and local government representatives, will be invited. A short video will be prepared that will summarize the Program objectives, potential interventions, and the planning and implementation process. A brief booklet (in Bangla) that will summarize the Program approach will be distributed.

(b) *Proactive disclosure of Program information.* The Program will create a portal that will proactively disclose Program information. For instance, the portal will display latest information on rural bridges (for example, their spatial location, photos, and construction and maintenance history); annual bridge construction and maintenance plan; and detailed information on awarded contracts, including contract costs, contractor names, progress, and payments made. The website will have features for visitors to ask questions and the LGED will provide subsequent responses, if the visitor provides contact information. This will facilitate a two-way communication between the LGED and the public. The LGED will publish a Program annual summary report. The report will contain, among others, summary information on Program achievements against targets, condition status of rural bridges, cursory future plans, and grievances received versus resolved. A summary of the Program's achievements will also be published in a reputed national newspaper.

(c) *Bridge intervention public consultations.* The Program will conduct public consultations to help the LGED to verify the list of RuBIMS prioritized bridges, which uses objective criteria. The consultations will mainly be used to establish whether the RuBIMS generated new construction and replacement bridge priority list reflects the actual field conditions or not. The process will be led by *upazila* engineer offices and the consultations will be held in *upazila parishads*. The event will be widely advertised. The potential participants will include local government representatives (*upzila* chairman, *union* chairmen, *ward* members), civil society organization representatives, transport operators, local businesses, *upazila* level LGED officials. An LGED appointed NGO will assist the *upzila* engineer offices in organizing these events.

(d) *Signboard and complaint register***.** Each worksite over a certain contract value (BDT 1.0 million; roughly US$12,500) will erect a signboard within seven days of contractor's mobilization. The objective of the signboard will be to promote transparency and accountability of the Program through disclosure of information and by providing contact details the official(s) to be contacted in case of any grievances. The signboard will contain summary information regarding the subproject, including the name of the project, name of the implementing organization, contract

amount, contract completion date, name of the official, along with contact details for registering complaints, and restrictions regarding engagement of child laborers.

(e) *Consultation on bridge design.* The Program will conduct compulsory consultations on the design of new bridges over a threshold: total length of 50 meters and above. The design discussions will mainly consider the following issues: free board for facilitating movement of water transport, any climate change related issues, bridge location and approach roads, inclusion of footpaths in a bridge, and inclusion of gender-related requirements in the bridge design.

(f) *Citizen engagement in ensuring bridge construction quality.* The Program will form a 5-7 members local "local bridge construction committee" for bridges over 50 meter or above. The committee will comprise two *union parishad* members (one of which will be a woman member), the headmaster of the nearby educational institution, an NGO representative, a representative of households in the proximity of the bridge site and the chairman of the nearby market development committee. The committee will contain a chairman and a secretary. The Program will develop generic terms of reference, which will guide the committee's scope of operation. The agreement between the contractor and the LGED will contain reference to the formation and operation of such a committee with its scope of work. Apart from assisting the LGED in maintaining quality of bridges under construction, the committee will also help the Program in managing gender-based violence, OHS, and environmental and social risks linked to the particular bridge. The committee will also help foster consultation with nearby communities.

(g) *Local disclosure of the Program information.* The Program will disseminate district level Program plans and achievements using local newspaper(s) and community radio(s), if available, once in a year. The district executive engineer's office will lead this process. The Program will also organize a yearly question and answer session for executive engineers using local community FM radio, where available.

(h) *Development and use of smartphone-based application.* The Program will develop a simple smartphone-based application for public to report on any bridge issues. Anyone will be able to access and view such inputs using the Internet. Furthermore, these inputs will be overlaid on Google Earth online maps.

Gender

91. Although bridge development can help local economic growth through improved connectivity, various constraints can limit its potential benefits to some population groups including women and children. The operation will endeavor to ensure that the benefits of the program are equitably distributed, especially the needs of women as transport users and their roles in provisioning of transport infrastructure are addressed, thus contributing towards gender equality.

92. As users, women's mobility needs have increased over the years with more women getting educated and entering the workforce. In rural Bangladesh, while women travel short distances by foot or other non-motorized transport means, buses are the common transport mode for medium to long-distance travel. Apart from poorly developed and maintained transport infrastructure that can endanger the safety of women, there are several constraints on walking in rural areas, especially for women.

93. To ensure that the bridge design is sensitive to the needs of women and children, the Program will conduct compulsory consultations on the design of new bridges that have a length of 50 meters and above. By doing so the Program will ensure that the location and the design of the bridge is conducive to the mobility of women and children. In addition, all bridges with a length of 50 meters and above will

include footpaths. This is expected to disproportionately benefit women and children as they are more reliant on walking and other non-motorized modes.

94. As employees, women's participation in the Bangladesh transport sector is significantly lower than men. Nationally, of the total number of people employed in the transport, storage, and communications sector in Bangladesh, only 8.1 percent are women.[19] The labor force participation rate of rural women in paid employment is only 22 percent. Furthermore, of the women employed in rural areas, 72 percent are employed as unpaid family workers. These statistics point to the low levels of participation of women in rural areas (especially in the formal sector) and, even worse, in the transport sector. The Government has been financing projects to reduce employment-related gender gaps between men and women. One such project is the Rural Employment and Road Maintenance Project that is employing rural women for road maintenance (low skilled job) since 2007. Breaking through the barriers that create gendered divisions of work will be necessary for women's full participation in the working world.

95. Worse still, female participation in high-skilled jobs within the rural transport sector is negligible. For example, only 3.4 percent of the total regular engineer positions in the LGED are held by women. Now there are only 94 women engineers in the LGED out of 2,764 regular LGED engineers (these engineers are generally recruited by the Public Service Commission of Bangladesh). Women are also hugely underrepresented in the overall LGED structure. Only 3.5 percent of the other regular LGED positions are filled by women (248 women staff against a total of 7,080 non-gazetted filled staff positions). The Program plans to work with the Government and universities to explore opportunities of employing women engineers under the Program plus in other LGED projects/programs.

96. The recruitment and retention of women in engineering areas in Bangladesh stem from severe social prejudices and taboos. Most institutions are not gender sensitive. Some faculty members in engineering collages/universities and employers still think that women have no place in engineering and science fields. While women still face barriers in combining marriage and motherhood with professional careers, the concept has been gaining acceptance in society over the recent years. There has been a recent surge in women studying sciences and mathematics. The percentage of women students in physics rose from 10 percent in 1970 to almost 30 percent in 2010.[20] The recent trend is encouraging and, for it to have a lasting impact on women, it is important to ensure that the studying of sciences and engineering translates into employment for women in these areas as well.

97. The operation will endeavor to fill this gender gap by employing women in medium to high skilled positions. These skilled jobs include roles such as engineers, technicians, consultants and other relevant positions in LGED. Through this, the operation will try to break the glass ceiling that women face in employment in technical fields. This will also allow women to learn technical, management, and leadership skills on the job and will benefit them even after this Program is over. Educational institutions are producing more female engineers than are currently being employed by the LGED. For example, in 1997, 16.5 percent of the students studying engineering were women.[21] This demonstrates that women

[19] Based on ILO data, using a three-year moving average.
[20] Choudury, S. 2013. "Women in Physics in Bangladesh,"
[21] Jahan, K., et al. "Women in Engineering in Bangladesh and the USA: A Comparative Study." https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwjd-cjQwr_aAhUiSN8KHZhGAvQQFggnMAA&url=https%3A%2F%2Fpeer.asee.org%2Fwomen-in-engineering-in-bangladesh-and-the-usa-a-comparative-study.pdf&usg=AOvVaw3BdCX8Nq4vG1ZniWrojmRN

are interested in technical fields and that there is a pipeline of women who can be employed in technical/high-skilled areas.

98. Under the operation, at least 20 percent of the staff employed in medium to high skilled roles will be women (see indicator 4.2). This is a sizable target given that the current level of female employment in the LGED is only 3.5 percent. At the moment the baseline level of employment for women is zero as recruitment for the operation is yet to take place. Amongst other roles, the Program will employ women as supervising consultants for the bridges. This will not only accord these women leadership roles but also, given the vast geographic scope of the Program, it will lead to the creation of role models for girls and young women—showing them that women can play have a prominent place in the rural transportation sector. Given that violence against women is prevalent in Bangladesh, sexual harassment in the work place can be a major deterrent for females vis-à-vis being employed as project staff. The Program will address this by creating appropriate working conditions for women including taking measures for mitigating sexual harassment in the workplace and sexual exploitation and abuse related risks (see below Labor Influx, SEA, and OHS section for details).

99. In addition, the operation plans to commission a study that will focus on improving gender aspects of the Program. The study will cover, amongst others, how to maximize the participation of women in the rural transport sector (for example, extending employment opportunities in skilled and unskilled jobs) and to review the current standard bridge designs to examine their suitability from a woman's, as well as physically challenged peoples', usability viewpoint. The study outputs will contain an action plan, which the Program will endeavor to implement. These outputs will also benefit future programs that relate to rural transportation in Bangladesh.

100. The activities undertaken by the Program to fill gender gaps for women, as both the user and employee perspective, are well aligned with LGED's own Gender Equality Strategy. The LGED has developed a Gender Equality Strategy in 2014 taking National Women Development Policy as the basis. The objective of the strategy is to develop women and to create a women-friendly environment at all levels of the LGED activities. The strategy proposed the creation of a Gender and Development Forum, which would be the main executive body for the implementation of the strategy. The strategy elements included collecting gender disaggregated data, M&E, building women-friendly infrastructure, creating employment for women along with improved working conditions for women, providing appropriate training for women, and ensuring participation of women in all areas of development.

Climate and Disaster Screening

101. Climate change poses an important development challenge for Bangladesh. In 2014, Bangladesh was ranked as the most climate-vulnerable country in the world. The likely implication to Bangladesh due to the climate change includes: (a) sea level rise and coastal inundation, (b) tidal flooding, (c) salinity intrusion, (d) cyclone and storm surges, (e) rainfall drainage and water logging, and (f) temperature increase. Climate-related risks to infrastructure are expected to grow with the increase in frequency and severity of extreme events.

102. In 2009, the GoB developed a climate change adaptation strategy and an action plan. The strategy has six pillars, including a pillar for infrastructure and another capacity building and institutional pillar. The infrastructure pillar emphasized the repair and rehabilitation of the existing infrastructure and to plan, design, and construct new infrastructure that can meet the climate change effects. The capacity building pillar calls for, among others, building climate change adaptation capacity of the key government ministries and agencies. The LGED has already undertaken a few climate change adaptation initiatives. One of them is the Coastal Climate Resilient Infrastructure Project under the Pilot Program for Climate Resilience. The objectives of the project include developing climate-resilient rural infrastructures

(including roads) and improving the LGED's institutional capacity for climate adaptation. The LGED is also establishing a dedicated Climate Resilient Local Infrastructure Center under the Climate Resilient Infrastructure Mainstreaming project fund by the Green Climate Fund and KfW.[22] The specific purpose of establishment of the center is the systematic integration of climate change adaptation into decision making regarding infrastructure planning, supervision, and maintenance at the LGED. With the U.K. Department of International Development's support, the LGED also undertook and completed a research activity titled 'Climate Resilient Reinforced Concrete Structures in the Marine Environment of Bangladesh'.

103. An analysis confirms that the Program's physical activities will face significant climate and geophysical hazards. The World Bank's Climate and Disaster Risk Screening tool was used in the analysis. The hazards are associated with the Program locations, physical components, and outcomes. Analysis results show that earthquake is the single most current key driver that poses high risks to physical component, outcomes, and service delivery. However, there are a few high-risk future key drivers that will affect the Program's locations, physical components, and outcomes. They are extreme precipitation and flooding, storm surge, and sea level rise. Extreme temperature is also expected to affect the project location and service delivery, albeit moderately. Some specific climate change Program impacts include: (a) disruption/discontinuation of the rural road networks due to sudden collapse of bridges caused by storm surge, flash flood; (b) a reduction of serviceability of bridges because of drainage congestions, shifting channel flows, embankment erosions, and reduction of navigational clearances; (c) a reduction of bridges' service lives due to increase in temperature, rainfall, sea level rise, and salinity, especially in coastal districts; and (d) an increase in Program costs from bridge construction and maintenance cost to offsetting climate change effects.

104. The Program will help the LGED develop and implement rural bridge climate change adaptation strategies. The PDO includes improving the climate resiliency of rural bridges. The Program will support several activities to help the LGED in rural bridge climate change adaptation. They include: (a) developing planning, design, and implementation of climate change adaptation guidelines for rural bridges; (b) implementing recommendations from the U.K. Department of International Development-supported climate resilient reinforced concrete structures research; (c) improving the LGED's climate change adaptation and decision-making capacity for rural bridges through training and research; the research areas will also include how the GIS could be used in the preparation of climate hazard maps and pinpointing mitigating interventions; (d) procuring modular bridges (or prefabricated concrete bridges) and storing them at strategic locations for quick restoration of rural connectivity severed due to natural extreme events (for example, floods, storm surges); and (e) supporting rural bridge climate change adaptation research activities under the Climate Resilient Local Infrastructure Center.

105. All Program activities will help in building resilience and adaptive capacity in the rural bridges subsector. These activities range from minor maintenance to major maintenance to new construction of bridges to institutional development. The activities, which help in building resilience and adaptive capacity, include: (a) improving planning, design, and technical specification parameters for rural bridges to make them climate resilient, especially in coastal districts; (b) improving or preserving rural connectivity through the maintenance, rehabilitation, and new construction of rural bridges, which will help improve network efficiency; (c) building capacity of government officials in identifying climate-related risks and implementation of rural bridge adaptive measures; and (d) improving informed rural bridge-related decision making through climate-related research on rural bridges. Annex 6 presents the rationale for operation's enhanced climate co-benefits.

[22] Reconstruction Credit Institute of Germany (*Kreditanstalt Für Wiederaufbau*).

Labor Influx, SEA, and OHS

106. Women, especially married women, have been entering labor markets in increasing numbers in Bangladesh. There has been an increase of 10 percentage points of female labor force participation rate among women ages 15 and above between 2003 and 2016. This achievement is in contrast with most other South Asian countries, where these rates fell. Girls and women are increasingly participating in public spheres (for example, school, labor markets, and political systems). This signals an increasing presence and power of their voices. Nonetheless, they face several challenges. One such challenge is the violence they face inside and outside their homes.

107. Violence against women and girls is rife in Bangladesh and is on the rise. A 2015 'violence against women' survey, jointly conducted by the United Nations and the Government, revealed that approximately three-fourths (72.6 percent) of married women in Bangladesh were physically, mentally, sexually, or economically abused at some point of their lives by their husbands. Analysis results of data collected from 56 districts (out of total 64 districts) by BRAC, an NGO, concluded that the violence against women and children was on the rise in these districts. For instance, there was over a 40 percent year-on-year increase of violence against women and children in those districts between 2016 and 2017. Women comprise an overwhelming majority of those cases (84 percent against children 16 percent). However, legal actions were taken only in a fifth of the cases. In Bangladesh, at least one-quarter of women working in the garment and electronics sectors have experienced physical, sexual, or verbal abuse at workplaces. Sexual violence is a key reason why women seek jobs in female-dominated occupations. This further accelerates the occupational sex segregation in the country. Bangladeshi women, in general, report experiencing sexual harassment while commuting to and from their places of work. To lower the risk of such violence, women form groups and travel together.

108. Barring a few conservative districts, the presence of women at construction sites is common, although not in overwhelming numbers. Women are generally engaged as unskilled laborers in construction sites. Given that these jobs are physically demanding, usually young to middle-age women work in these sites. Although there is no empirical evidence to confirm the overwhelming existence of SEA against women at construction worksites, it will not be an overestimate to assume that women face some form of violence against them in these worksites. This is given the general condition that prevails in the country concerning violence against women and girls. Also, women might also face sexual harassments while commuting.

109. Labor influx risks may not be substantial in the context of the Program. The Program will maintain and construct rural bridges and will involve simultaneous execution of small- to medium-size contracts in rural areas. Unlike many other countries, rural areas of Bangladesh are not sparsely populated. Furthermore, it is expected that an overwhelming majority of contractors will be local and they will engage local laborers. This will mitigate against many of the labor influx risks. However, in some cases, especially in the case of medium-size contracts, it is expected that the contractors will engage nonlocal laborers, especially the skilled laborers. This might have some labor influx impacts. Also, it is to be noted that SEA risks may be increased due to the spare cash available to the local laborers, especially the younger ones, combined with the prevailing adverse situation regarding violence against women and girls. The results show that in most of the cases, the Program's labor influx risks are 'low'. However, there are a few areas that pose 'medium' (child labor, SEA, inadequate waste disposal, and wastewater discharges) to 'high' (injuries to workers or passersby from construction activities) risks.

110. Labor influx and SEA risk mitigation measures are devised based on the following principles: (a) adopt a 'do no more harm' approach and be proactive in prevention measures; (b) it may not be entirely possible to mitigate all SEA risks and the Program will aim to minimize these risks; (c) the role of the World Bank will only be as a change agent in bringing all actors together for effective prevention and mitigation

of risks; (d) risk prevention and mitigation efforts will be led by the Government and the existing Government structure will be used for risk prevention and mitigation; (e) the involvement of the local government and the community-based organizations will be maximized; and (f) mitigation and prevention efforts will be built on the experience gained by different NGOs.

111. Bangladesh has made decent progress in addressing the gender-based violence issues. This progress is because of joint efforts made by the Government, DPs (principally the United Nations), and the NGOs. A United Nations Development Programme (UNDP)-supported Pilot Project on Human Rights of Sexual and Gender-based Violence (SGBV) Victims in Bangladesh was concluded just over a year ago. The project partners were UNDP, Ministry of Women and Children Affairs, and BRAC. The project aims to improve response and support services for SGBV victims and established a formal system for tracking and monitoring of SGBV cases. BRAC has been the field implementation partner of the project. Other NGOs that are also active in the SGBV area include *Ain o Salish Kendra* and *Nijera Kori*. BRAC has been collecting data using its ward-based staff on gender-based violence from 56 districts and regularly publishes reports that present violence-related statistics and trends. Furthermore, under its Community Empowerment Program, BRAC has been working to improve awareness on violence against women and coordinating victim support. BRAC has also developed four training modules (for government officials, elected local government officials, *upazila* Women Development Forum, and beneficiaries) on gender-based violence. This NGO has also been working to activate the *union*-level Committee for Prevention of Violence Against Women, one of the 13 *union*-level committees.

112. Ensuring worker's safety at construction sites is the lowest priority in Bangladesh. Standard contract documents have clauses on ensuring OHS at worksites. However, the enforcement is, almost, nonexistent. The Program plans to tackle OHS issues at bridge construction sites comprehensively.

113. The Program will take several measures for tackling the labor influx, SEA, and OHS issues as shown in Table 10.

Table 10. Measures to Tackle Labor Influx, SEA, and OHS

Activities	Risk Mitigation	Verifying Indicators	Verification Sources
Specialized training on SEA and sexual harassment in the workplace for Government officials involved in the Program implementation	SEA	Number of officials trained	Program reports
Contract provisions barring unlawful engagement of child laborers and engaging child laborers [see note 'a' below] for activities that are only allowed under the local law and ILO Convention	Unlawful use of child laborers	Provision made in the contract documents	Program's standard bidding documents
Signboards at worksites stating requirements for engaging child laborers	Same as above	Signboards erected at worksites above a certain contract threshold value	Third-party certification in its report
Introduction of workers codes of conduct for contracts above a certain contract financial threshold	SEA	Code of conduct introduced for contracts above a threshold value	Third-party certification in its report
Inclusion of OHS as a line item in the bill of quantities	OHS	OHS issues included in the bill of quantities	Third-party certification in its report
Engagement of an NGO for the following purposes:	SEA	An NGO is	Contract

Activities	Risk Mitigation	Verifying Indicators	Verification Sources
(a) organizing training at different levels on SEA and sexual harassment; (b) organizing *union*-level Committee for Prevention of Violence against Women and *upazila*-level Women Development Forum; (c) providing support services to SEA and sexual harassment in the workplace victims; (d) providing support to the LGED Women Development Forum in preventing and mitigating the SEA risks		engaged	between the LGED and NGO
Engagement of a third party [see note 'b' below] for helping the LGED in monitoring and managing OHS, labor influx, and child labor engagement issues	SEA and OHS	Third party engaged	Contract between the LGED and a third party
Use of *union*-level committees and *upazila*-level Women Development Forum for reporting on SEA-related grievances and organizing the inclusion of these grievances in the grievance redressal system	SEA	Complaints, if any, registered in the grievance redressal system	Report of the NGO
Inclusion of labor influx risk mitigation conditions within the contracts	Labor influx	Conditions included in the contracts	Program reports and random verification
Development of a labor management plan for contracts over certain threshold	Labor influx	Labor management plan available for contracts over the set threshold	Third-party certification in its report

Notes: a. According to the provisions outlined in the local law and ILO Convention on Worst Form of Child Labor.
b. The third party could be a consulting company or a reputed NGO with experience of working with OHS, labor influx issues etc.

D. Risk Assessment

114. The operation's overall risks have been assessed as 'Substantial'. Table 11 provides the summary of the assessed risks. Risks under different risk categories have been judged as 'Substantial', barring stakeholders and macroeconomic categories, which are determined as 'Moderate'.

Table 11. Program Risks

Systematic Operations Risk-Rating Tool (SORT)	
Risk Category	**Rating (H, S, M, L)**
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Moderate

9. Others (Competing Programs and Projects and Achievement of DLIs and PAP activities)	Substantial
OVERALL	**Substantial**

115. Risk analysis results have helped in designing Program risk mitigation measures. Table 12 provides the risk mitigation measures against the identified risks under different risk categories.

Table 12: Summary of Risks and Mitigation Measures

Risk Category	Main Risks	Mitigation Measures
Political and Governance	a. Political fragility. b. Governance, accountability and transparency (lack of).	• Political fragility risks cannot be fully mitigated. However, political development will be monitored carefully and measures will be undertaken to reduce the risks. • The operation is designed to mitigate against the governance risks. Measures are undertaken for optimal citizen engagement, transparency and accountability including intermediate results indicator, DLI and PAP actions.
Sector strategies and policies	c. Bridge interventions selection in an ad hoc manner. d. Insignificant bridge maintenance resources. e. No dedicated bridge construction and maintenance program.	• The operation will create a dedicated Program with adequate bridge maintenance resources • The Program will use RuBIMS for intervention prioritization.
Technical design of the Program	a. Achievement of DLIs within a timeframe and with quality. b. LGED's inexperience in the execution of similar operation. c. Capacity building component may struggle to keep pace with the physical component resulting in a mismatch.	• Operation's IPF component is designed to provide additional implementation support to the LGED so that Program objectives are achieved as per the Program plan. Also, the Program has a provision of bridge related institutional strengthening including the creation of additional positions at LGED headquarters.
Institutional capacity for implementation and sustainability	a. LGED's limited bridge maintenance experience. b. LGED set up is inadequate to handle bridge design, construction, and maintenance issues sustainably. c. Available rural bridge inventory and condition data are partial and in some cases inaccurate.	• The operation will create a dedicated Program. • Bridge inventory and condition data will be collected under the Program (a DLI). • IPF component will provide additional implementation support to LGED.
Fiduciary	a. Inaccurate and delayed financial statements. b. Low internal audit capacity and delays in tackling audit observations. c. Some GoB's procurement legislation provisions are not consistent with international best practices. d. Absence of a procurement strategy.	• Table 3.2 (Annex 3) provides fiduciary risk mitigation measures that include DLIs, PAP activities, DLI verification protocols.

Risk Category	Main Risks	Mitigation Measures
	e. Ineffectual contract management and ineffective procurement complaint handling.	
Environmental and social	a. LGED's patchy performance in managing environmental and social risks. b. Implementation of a PforR for the first time. c. labor influx, child labor, and gender-based violence-related risks. d. Physical activities are subjected to significant climate and geophysical hazards.	• Annex 3 provides environmental and social risk mitigation measures that include PAP actions, institutional strengthening and capacity building, training activities, including measures to tackle labor influx, child labor and sexual exploitation and abuse related risks. • The operation has adequate provisions to tackle climate change phenomenon (both DLIs and PAP actions)
Others: Competing programs and projects	a. Existing and potential new bridge construction projects/programs could undermine the Program effectiveness. b. Chances of "double dipping".	• This risk may not be mitigated fully. However, the proposed operation will help to streamline the rural bridge sub-sector and improve the effectiveness of the Program. • Adequate fiduciary and technical precautionary measures are undertaken to mitigate "double dipping" risks.
Others: DLIs and PAP activities	a. Demanding planning and implementation processes for achieving DLIs. b. Non-implementation or delayed implementation of PAD actions.	Operation's IPF component is designed to provide additional implementation support to the LGED so that DLIs are achieved and PAP activities are implemented on time.

E. Program Action Plan

116. Twelve PAP actions are carefully designed to facilitate improvement of Program performance in several areas. The areas are: (a) technical; (b) system cum business process improvement; (c) agency capacity and performance; and (d) other Program risk mitigation. While Table 13 provides a summary of the PAP, Annex 5 provides PAP action details.

117. While designing the PAP, several strategies were adopted. The strategies include actions that: (a) are crucial in achieving DLIs and aid in the Program's smooth implementation; (b) can be achieved within the Program duration and preferably within the early phase of Program implementation to maximize their impact on the Program; (c) are key to enhancing the Program's efficiency, transparency, and accountability; (d) are recommended as key actions by different assessments (technical, fiduciary, social, and environmental); (e) are critical in mitigating other risks (for example, sexual exploitation and abuse (SEA), labor influx); and (f) are key in enhancing the Program's climate resiliency.

Table 13. PAP Summary

Action Area (Number of Actions)	Action Item Summary
Technical (Five)	• POM, bridge inspection and maintenance guidelines development • Comprehensive technical audits • Climate resiliency guidelines development; development of norms and updating of schedule of rates for climate-resilient reinforced cement concrete
System cum business process (Two)	• Procurement strategy development

Action Area (Number of Actions)	Action Item Summary
	• Creation and operationalization of an electronic complaint register
Agency capacity and performance (Two)	• Capacity improvement - audit and environmental and social management
Other risk mitigation (Three)	• Creation of economic codes • Activities linked to SEA, labor influx, and OHS risk mitigation

.

Annex 1: Results Framework

Table 1. 1. Results Framework Matrix

Results Areas Supported by PforR	PDO/ Outcome Indicators	Intermediate Results Indicators	DLI #	Unit of Measurement	Baseline (Year)	End Target (Year)
Results Area 1: Preservation of rural Bridges	PDO Indicator 1: *Upazila* or *union* road bridges that are in good and fair condition			Percentage	0% (2018)	25% (2023)
		IR Indicator 1.1: UZR and UNR bridges maintained (minor & major maintenance)	DLI-1 + DLI-2	Meter	0 meter (2018)	85,000 meters (2023)
		IR Indicator 1.2: UZR or UNR bridges rehabilitated	DLI-3	Meter	0 meter (2018)	24,000 meters (2023)
Results Area 2: Rural bridge climate resiliency	PDO Indicator 2: *Upazila* or *union* road new bridges built or replaced with climate resilient features in 19 coastal districts			Percentage	0% (2018)	5% (2023)
		IR Indicator 2.1: Rehabilitation, capacity expansion, replacement, and new construction works of bridges in 19 coastal districts with climate-resilient reinforced cement concrete structures	DLI-3 + DLI-4 + DLI-5	Percentage	0% (2018)	25% (2023)
		IR Indicator 2.2: Construction of climate-resilient new rural bridges in overall program areas	DLI-5	Meter	0 meter (2018)	2,000 meters (2023)
Results Area 3: Rural transport connectivity	PDO Indicator 3: Length of severed or constrained *Upazila* or *union* road links made fully operational			Kilometer	0 (2018)	5,000 km (2023)
		IR Indicator 3.1: UZR or UNR bridge capacity augmented	DLI-4	Meter	0 meter (2018)	5,000 meters (2023)

Results Areas Supported by PforR	PDO/ Outcome Indicators	Intermediate Results Indicators	DLI #	Unit of Measurement	Baseline (Year)	End Target (Year)
		IR Indicator 3.2: UZR or UNR bridges newly constructed or replaced	DLI-5	Meter	0 meter (2018)	20,000 meters (2023)
Results Area 4: Institutional capacity, gender and citizen engagement	PDO Indicator 4: Program bridges designed using in-house technical resources			Percentage	0 (2018)	75 (2023)
		IR Indicator 4.1: Senior positions (executive engineer and above) created or reassigned at headquarters	Not a DLI	Number	0 (2018)	10 (2023)
		IR Indicator 4.2: Employment of women under the Program in high skilled positions	Not a DLI	Percentage	0 (2018)	20 (2023)
		IR Indicator 4.3: Consultations on design of new bridges length of 50 meters and above	Not a DLI	Percentage	0 (2018)	50 (2023)

Table 1. 2. Indicator Descriptions

Indicator Name	Description	Frequency	Data Source	Methodology for data collection	Responsibility for Data Collection	DLIs	
						Responsibility for Data Verification	Scalability of Disbursement (Yes/No)
PDO Indicator 1: *Upazila* or *union* road bridges that are in good and fair condition	UZR and UNR bridges that require only minor maintenance & major maintenance	(a) Midterm review and (b) within 4 months of closing date	RuBIMS	Data on bridge conditions will be collected and updated in RuBIMS.	LGED	n.a.	n.a.
IR Indicator 1.1: UZR and UNR bridges maintained (minor & major maintenance)	Completed meters of UZR and UNR bridges that have undergone minor & major maintenance	Annual updates	Program reports	The Program reports will provide information based on data from the field.	LGED	Verification entity	Yes

Indicator Name	Description	Frequency	Data Source	Methodology for data collection	Responsibility for Data Collection	DLIs	
						Responsibility for Data Verification	Scalability of Disbursement (Yes/No)
IR Indicator 1.2: UZR or UNR bridges rehabilitated	Completed meters of UZR and UNR bridges that have undergone rehabilitation	Annual updates	Program reports	The Program reports will provide information based on data from the field.	LGED	Verification entity	Yes
PDO Indicator 2: *Upazila* or *union* road new bridges built or replaced with climate-resilient features in 19 coastal districts	Completed meters of UZR and UNR new bridges with climate-resilient features in 19 coastal districts	(a) Midterm review and (b) within 4 months of closing date	Program reports	The Program reports will specify how many new bridges are built or replaced with climate-resilient features. This will be supplemented by field visits.	LGED	n.a.	n.a.
IR Indicator 2.1: Rehabilitation, capacity expansion, replacement, and new construction works of bridges in 19 coastal districts with climate-resilient reinforced cement concrete structures	Proportion of UZR and UNR bridges that have been rehabilitated, capacity expanded, replaced, or newly built with climate-resilient features in 19 coastal districts compared with the total number of bridges that underwent same interventions in 19 coastal districts	Annual	Program reports	The Program reports what proportion of new bridges are built, replaced, capacity expanded, or rehabilitated with climate-resilient features in 19 coastal districts. This will be supplemented by field visits.	LGED	n.a.	n.a.
IR Indicator 2.2: Construction of climate-resilient new rural bridges in overall program areas	Completed meters of new UZR and UNR bridges with climate-resilient features	Annual	Program reports	The Program reports will provide information based on data from the field.	LGED	n.a.	n.a.
PDO Indicator 3: Length of severed or constrained *upazila* or	Kilometers of UZRs and UNRs made fully operational through capacity expansion,	(a) Midterm review and (b) within 4	GIS/ RuBIMS	Data will be collected from the field and will be verified using the	LGED	n.a.	n.a.

Indicator Name	Description	Frequency	Data Source	Methodology for data collection	Responsibility for Data Collection	DLIs	
						Responsibility for Data Verification	Scalability of Disbursement (Yes/No)
union road links made fully operational	replacement, or new construction of bridges	months of closing date		GIS/ RuBIMS database. A road link will be assessed as fully operational if that link does not have any gaps and does not have bridges that are less than 5.5 meters carriageway width.			
IR Indicator 3.1: UZR or UNR bridge capacity augmented	Completed meters of UZR and UNR bridges that have undergone capacity expansion (widening)	Annual	Program progress reports	The Program reports will provide information based on data from the field.	LGED	Verification entity	Yes
IR Indicator 3.2: UZR or UNR bridges newly constructed or replaced	Completed meters of UZR and UNR bridges that are newly constructed or replaced	Annual	Program progress reports	The Program reports will provide information based on data from the field.	LGED	Verification entity	Yes
PDO Indicator 4: Program bridges designed using in-house technical resources	Percentage of Program bridges designed using in-house technical resources.	Annual	Program progress reports	The Program reports will provide information on this.	LGED	n.a.	n.a.
IR Indicator 4.1: Senior positions (executive engineer and above) created or reassigned at headquarters	Number of senior positions (executive engineer or above) created and staffed at headquarters to deal with rural bridges	Annual	Program progress reports	The Program reports will provide information on this including how many them are women. This would be verified against the Government's administrative orders.	LGED	n.a.	n.a.

Indicator Name	Description	Frequency	Data Source	Methodology for data collection	Responsibility for Data Collection	DLIs	
						Responsibility for Data Verification	Scalability of Disbursement (Yes/No)
	Positions filled by women as a proportion of total number of technicians, engineers, consultant and other relevant staff positions under the operation	Annual	Program progress reports	The Program progress reports will provide specific information on this.	LGED	n.a.	n.a.
IR Indicator 4.3: Consultations on design of new bridges length of 50 meters and above.	Site consultations with nearby residents on the design of bridges that have length of 50 meters and above.	Annual	Program progress reports	The Program progress reports will provide specific information on this.	LGED	n.a.	n.a.

Annex 2. Disbursement Linked Indicators, Disbursement Arrangements, and Verification Protocols

Table 2.1: DLI Matrix

	Total Financing Allocated to DLI (US$)	As % of Total Financing Amount	DLI Baseline	Indicative Time Line for DLI achievement				
				Year or Period 1	Year or Period 2	Year or Period 3	Year or Period 4	Year or Period 5
DLI-1: Minor Maintenance [Target of 60,000 m]			0	10,000	20,000	25,000	5,000	—
Allocated amount:	*42,000,000*	*10.7%*		*7,000,000*	*14,000,000*	*17,500,000*	*3,500,000*	—
DLI-2: Major Maintenance [Target of 25,000 m]			0	5,000	8,000	10,000	2,000	—
Allocated amount:	*43,000,000*	*10.9%*		*8,600,000*	*13,760,000*	*17,200,000*	*3,440,000*	—
DLI-3: Rural bridge rehabilitation [Target of 24,000 m]			0	1,000	7,000	7,000	7,000	2,000
Allocated amount:	*75,000,000*	*19.1%*		*3,125,000*	*21,875,000*	*21,875,000*	*21,875,000*	*6,250,000*
DLI-4: Rural bridge capacity expansion [Target of 5,000 m]			0	—	300	1,000	1,700	2,000
Allocated amount:	*40,000,000*	*10.2%*		-	*2,400,000*	*8,000,000*	*13,600,000*	*16,000,000*
DLI-5: Rural bridge replacement or new bridge construction *[Target of 20,000 m]*			0	—	300	4,000	8,500	7,200
Allocated amount:	*163,000,000*	*41.5%*	—	—	*2,445,000*	*32,600,000*	*69,275,000*	*58,680,000*
DLI-6: Implementation and updating of			0	—	Collecting 20% UZR and UNR bridge and	Collecting additional 40% UZR and UNR	Collecting additional 40% UZR and UNR	Collecting updated UZR and UNR bridge

	Total Financing Allocated to DLI (US$)	As % of Total Financing Amount	DLI Baseline	Indicative Time Line for DLI achievement				
				Year or Period 1	Year or Period 2	Year or Period 3	Year or Period 4	Year or Period 5
RuBIMS *[Different targets in different years]*					gap data across the country, populating RuBIMS using the collected data, and publishing the bridge data on the LGED website	bridge and gap data across the country, populating RuBIMS using the collected data, and publishing the bridge data on the LGED website	bridge and gap data across the country, populating RuBIMS using the collected data, and publishing the bridge data on the LGED website	and gap data in at least 50% of districts, updating RuBIMS information using the updated data, and publishing the updated data on the LGED website
Allocated amount:	*10,000,000*	*2.6%*		—	*2,500,000*	*2,500,000*	*2,500,000*	*2,500,000*
DLI-7: Contract and fiduciary system management DLI-7a. Percentage of national competitive tenders issued using e-contract management module of e-governance procurement			0	—	10 [500,000]	40 [1,500,000]	60 [1,000,000]	
DLI-7b. Percentage of work contracts completed within the original contractual timeline			30	—	35 [500,000]	50 [1,500,000]	60 [1,000,000]	70 [1,000,000]

	Total Financing Allocated to DLI (US$)	As % of Total Financing Amount	DLI Baseline	Indicative Time Line for DLI achievement				
				Year or Period 1	Year or Period 2	Year or Period 3	Year or Period 4	Year or Period 5
DLI-7c. Effective and efficient Fiduciary System Management			No committee for audit observation resolution, ad hoc internal audit arrangements and, resolution of audit observations poor		Constitution of an Audit Observation Resolution Committee at the LGD which will meet at least twice within a financial year with an aim to resolve audit issues [1,000,000]	Successful completion of at least one internal audit assignment of the Program using risked-based internal auditing approach [1,000,000]	Resolution of at least 80% (in number) of audit observations [1,000,000]	
Allocated amount:	*10,000,000*	*2.6%*		*-*	*2,000,000*	*4,000,000*	*3,000,000*	*1,000,000*
DLI-8: Transparency and accountability DLI -8(a): Adaptation and operationalization of GRS			No workable GRS available	LGED adapts and approves GRS Guidelines in line with the Cabinet Division's GRS guidelines of 2015 [1,000,000]	LGED implements a department wide web-based GRS to track complaints on its department's activities; publicly publishes yearly summary reports detailing number of	LGED publicly publishes yearly summary reports detailing number of received complaints, complaint types and resolutions' status [1,000,000]	LGED publicly publishes yearly summary reports detailing number of received complaints, complaint types and resolutions' status [1,000,000]	LGED publicly publishes yearly summary reports detailing number of received complaints, complaint types and resolutions' status [1,000,000]

	Total Financing Allocated to DLI (US$)	As % of Total Financing Amount	DLI Baseline	Indicative Time Line for DLI achievement				
				Year or Period 1	Year or Period 2	Year or Period 3	Year or Period 4	Year or Period 5
					received complaints, complaint types and resolutions' status [1,000,000]			
DLI-8(b): Development and operationalization of smartphone-based field inspection application			Beta version of the smartphone-based application for field work inspection available	LGED finalizes design and approves a table-cum-smartphone-based application for field work inspection. [1,000,000]	LGED publicly publishes yearly summary reports detailing number of site visit made, summary finding of such visits and number of visits made by different levels of officials [1,000,000]	LGED publicly publishes yearly summary reports detailing number of site visit made, summary finding of such visits and number of visits made by different levels of officials [1,000,000]	LGED publicly publishes yearly summary reports detailing number of site visit made, summary finding of such visits and number of visits made by different levels of officials [1,000,000]	LGED publicly publishes yearly summary reports detailing number of site visit made, summary finding of such visits and number of visits made by different levels of officials [1,000,000]
Allocated amount (US$):	*10,000,000*	*2.6%*		*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*
Total Financing Allocated (US$):	*393,000,000*	*100.0%*		*20,725,000*	*61,480,000*	*105,175,000*	*119,190,000*	*86,430,000*

Table 2.2: DLI Verification Protocol

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
DLI-1	DLI-1. Rural bridge minor maintenance	**Requirements** • Completion of one or more minor maintenance works as defined in Table 2.3 and physical verification of repair works for all elements listed in Catalogue-A of the POM unless site conditions demand partial solutions as the only practicable option. • A bridge will be eligible to be counted toward the physical targets if it fulfils the following: (a) Located either on a UZR or a UNR according to the definition in the GoB's gazette notification dated October 29, 2017. (b) The bridge is identified for minor maintenance in the prioritized annual work plan generated through the RuBIMS. Before the finalization of RuBIMS the prioritization should be based on the criteria set forth in the POM [a]. (c) The bridge appears in the annual work plan which is the basis for funding through the budget cycle. (d) Implementation of the work plan in line with a time bound procurement plan. (e) Only completed bridges will be counted toward the DLI. **Exclusions** • Bridges within exclusion conditions set out in the Financial Agreement of the Program.	Yes - to the nearest 1/10th meter length[23] of a single completed bridge	Bridge Dossiers assembled by the LGED and visual inspection on a sample basis for verification	IMED of the Ministry of Planning with technical backstopping from some credible technical agent/agents.	• All Bridge Dossiers to undergo a thorough review to check their completeness/compliance before physical verification. • The verification entity will select a random sample of not less than 10% of completed bridges (by number) for physical verification. The sample results will apply to entire DLI-1 category works within the same disbursement request.

[23] The length is defined as the distance between two ends of the main bridge deck, which will exclude any approach slab and will not be greater than the distance between two abutment ends.

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		• In the case of Open Tendering Method, (a) bids are invited or rejected based on percentage above or below the estimated cost and (b) contracts awarded using a lottery system. • Bids awarded disregarding tenderers' qualification/experience requirements.				
DLI-2	DLI-2. Rural bridge major maintenance	**Requirements** • Completion of one or more major maintenance works as defined in Table 2.3 and physical verification of state of good repair for all elements listed in Catalogue-B of POM**Error! Reference source not found.** unless site conditions demand partial solutions as the only practicable option. • A bridge will be eligible to be counted toward the physical targets if it fulfils the following: (a) Located either on a UZR or a UNR according to the GoB's gazette notification dated October 29, 2017. (b) The bridge is identified for major maintenance in the prioritized annual work plan generated through the RuBIMS. Before the finalization of RuBIMS, the prioritization should be based on the criteria set forth in the POM [a] (c) The bridge appears in the work plan which is the basis for funding through the budget cycle. (d) Implementation of the work plan in line with a time bound procurement plan.	Yes - to nearest 1/10th meter length of a single completed bridge	Bridge Dossiers assembled by the LGED and visual inspection on sample basis for verification	Same as above	• All Bridge Dossiers to undergo a thorough review to check their completeness/compliance before physical verification. • The verification entity will select a random sample of not less than 20% of completed bridges (by number) for physical verification. The sample results will apply to the all the bridges submitted for DLI verification under this DLI category in a particular tranche.

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		(e) Environmental and social risks assessed and risk mitigation measures implemented as per ESMF provisions. (f) Implemented using the approved 'Quality Assurance Plan' and evidence exists in this regard. (g) Only completed bridges will be counted toward this DLI. **Exclusions** • Same as previous DLI in this table				
DLI-3	DLI-3. Rural bridge rehabilitation	**Requirements** • Completion of one or more rehabilitation works as defined in Table 2.3 and physical verification of state of good repair for all elements listed in Catalogue-C of the POM unless site conditions demand partial solutions as the only practicable option. • Maximum 10 percent of the DLI value as defined in Table 2.3 will be eligible for structures over 3 meters and up to 6 meters length. • A flexibility of 20 percent will be given to cover bridges that do not follow this process to allow for unforeseen or emergency situations. Any modular bridges procured and stored in strategic locations to restore connectivity disrupted by natural extreme events (for example, floods) will be included within this limit. • A bridge will be eligible to be counted toward the physical targets if it fulfils the following:	Yes - to nearest 1/10th meter length of a single completed bridge	Bridge Dossiers assembled by the LGED and visual inspection on sample basis for verification	Same as above	• All Bridge Dossiers to undergo a thorough review to check their completeness/compliance before physical verification. • The verification entity will select a random sample of not less than 25% of completed bridges (by number) for physical verification. The sample results will apply to all the bridges submitted for DLI verification under this DLI category in a particular tranche • At least 50% verification of storage of modular bridges in strategic locations.

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		(a) Located either on a UZR or a UNR according to the GoB's gazette notification dated October 29, 2017. (b) The bridge is identified for rehabilitation works in the prioritized annual work plans generated through RuBIMS. Before the finalization of RuBIMS the prioritization should be based on the criteria set forth in POM [a]. (c) The bridge appears in the work plan which is the basis for funding through the budget cycle. (d) Implementation of the work plan in line with a time bound procurement plan. (e) Environmental and social risks assessed and risk mitigation measures implemented as per ESMF provisions. (f) Implemented using the approved 'Quality Assurance Plan' and evidence exists in this regard. (g) The bridge is not within the exclusion conditions set out in the Financial Agreement of the Program • Only completed bridge length and procured and strategically stored modular bridge length will be counted toward this DLI. **Exclusions** • Same as previous DLI in this table				
DLI-4	DLI-4. Rural bridge capacity expansion	**Requirements** • Completion of one or more capacity expansion works as defined in Table 2.3 and physical verification of state of good repair for all elements listed in Catalogue-D of the POM	Yes - to nearest 1/10th meter length of a single	Bridge Dossiers assembled by the LGED and visual	Same as above	• All Bridge Dossiers to undergo a thorough review to check their completeness/compliance

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		• Maximum 10 percent of the DLI value as defined in Table 2.3 will be eligible for structures over 3 meters and up to 6 meters length. • A bridge will be eligible to be counted toward the physical targets if it has been through the following planning process: (a) The bridge is identified for capacity expansion works in the prioritized annual work plans generated from RuBIMS. Before the finalization of RuBIMS the prioritization should be based on the criteria set forth in the POM[a]. (b) The bridge appears in the work plan which is the basis for funding through the budget cycle. (c) Implementation of the work plan in line with a time bound procurement plan. (d) Environmental and social risks assessed and risk mitigation measures implemented as per ESMF provisions (e) Implemented using the approved 'Quality Assurance Plan)' and evidence exists in this regard. • Achievement will be attained based on the cumulative number of meters of completed bridges made available in the country. **Exclusions** • Same as previous DLI in this table	completed bridge	inspection on sample basis for verification		before physical verification. • The verification entity will select a random sample of not less than 25% of completed bridges (by number) for physical verification. The sample results will apply to all the bridges submitted for DLI verification under this DLI category in a particular tranche.
DLI-5	DLI-5: Rural bridge replacement or new construction	**Requirements** • Completion of replacement or new construction works as defined in Table 2.3 and	Yes - to nearest 1/10th meter length	Bridge Dossiers assembled	Same as above	• All Bridge Dossiers to undergo review for

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		physical verification of state of good condition bridges listed in Catalogue-E (replacement) and Catalogue-F (new construction) of the POM • Maximum 10 percent of the DLI value as defined in Table 2.3 will be eligible for structures with length over 3 meters and up to 6 meters. • A bridge will be eligible to be counted toward the physical targets if it has been through the following planning process: (a) The bridge is identified for replacement or new construction works in the prioritized annual work plans generated from RuBIMS. Before the finalization of RuBIMS the prioritization should be based on the criteria set forth in the POM [a]. (b) The bridge appears in the work plan which is the basis for funding through the budget cycle. (c) Implementation of the work plan in line with a time bound procurement plan. (d) Environmental and social risks assessed and risk mitigation measures implemented as per ESMF provisions. (e) Approval and implementation of 'Quality Assurance Plan' following the item of works involved in replacement for individual bridge. • Achievement will be attained based on the cumulative number of meters of completed bridges and will be counted toward this DLI. **Exclusions**	of a single completed bridge	by the LGED and visual inspection on sample basis for verification		completeness/compliance before verification. • Physical verification to be applied to 25% of works covered by disbursement request. The sample results will apply to all the bridges submitted for DLI verification under this DLI category in a particular tranche.

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		• Same as previous DLI in this table				
DLI-6	Implementation and updating of RuBIMS	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the progress of operationalization and updating of RuBIMS. • Completion of rural bridge data collection in mentioned number of districts. • Completion of uploading of data in RuBIMS and publication of the data on the LGED website. • Full implementation will be judged when the program coordinator has provided evidence of such data collection and uploaded data on the website.	No	RuBIMS/ LGED	Same as above	• The verification entity will conduct an audit of a portion of entries to check the completeness and correctness of the entered data. • The verification entity may also conduct field visits to physically check the correctness of the entries.
DLI-7	7a. Percentage of national competitive tenders issued using e-contract management module of e-governance procurement	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the overall progress of the use of e-CM module of the e-GP for bridge contracts under the Program. • Data will be collected every year by checking the use of e-CM module in contract management of the national competitive contracts awarded in that particular year compared to the total national competitive contracts awarded that particular year.	Yes	Data source: e-GP system	Same as above	• Verification will be conducted using a desk-based verification process taking data from the e-GP (e-CM) system.
	7b. Percentage of works contracts completed within the original contractual timeline	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the overall performance of the LGED in the timely execution of bridge contracts in any one period of the Program. • Data will be collected every year taking the contracts completed in that particular year and will compare the actual substantial contract completion time against the original contractual completion time.	Yes. However, over a baseline of 30% of bridgeworks contracts under the Program substantially completed	Data source: e-GP system, Contract/ procurement files	Same as above	• Verification will be conducted using a desk-based verification process and, where applicable, taking data from the e-GP (e-CM) system.

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
		• The target related to the proportion of contracts substantially completed within the original contractual completion time in any one period of the Program. Only the contracts completed within a given year/period will be considered in that year's target achievement calculation.	within the original contract completion time.			
	7c. Effective and efficient Fiduciary Management	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the effective and efficient management of key fiduciary issues. • Data will be collected in from 2nd year onward. • The DLI target the constitution of an Audit Observation Resolution Committee which will be considered to be formed if it is constituted through an administrative order and minutes of meetings are available. • The DLI target regarding the successful completion of at least one internal audit assignment will be considered achieved if the audit was carried out using risk-based internal auditing approach. • The DLI target regarding the resolution of audit observations will be considered to be achieved if 80% of the Program's audit observations (since the inception of the Program) are discussed at the Audit Observation Resolution Committee and decisions taken for their resolution.	No	Data source: LGED/ FAPAD	Same as above	• Verification will be conducted using a desk-based verification process.
DLI-8	8a. Adaptation and	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the transparency and accountability of the Program in the form of	No	LGED	Same as above	• Verification will be conducted using a desk-

#	DLI	Definition/Description of Achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLI and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedures
	operationalization of GRS	(a) Adaptation and operationalization of a GRS, related policies and guidelines, and publication of grievance resolution-related information • Data will be collected every year.				based verification process.
	8b. Development and operationalization of smartphone-based field inspection application	• Achievement of DLI as defined in Table 2.3 • This DLI will measure the transparency and accountability of the Program in the form of (a) Finalization and operationalization of a tablet- cum smartphone-based application for field work inspection, its use, and publication of field work inspection information • Data will be collected every year.	No	LGED	Same as above	• Verification will be conducted using a desk-based verification process.

Note: **[a]. The first-year program has been agreed based on 2017/18 condition surveys but prioritized manually following the POM as RuBIMS was still under development. This will be an acceptable basis for determining agreed bridges.**

World Bank Disbursement Table

Table 2.3: Disbursement Table

#	DLI	Bank Financing Allocated to the DLI (US$)	Of which Financing Available for Prior Results	Deadline for DLI Achievement	Minimum DLI Value to Be Achieved to Trigger Disbursements of Bank Financing	Maximum DLI Value(s) Expected to Be Achieved for Bank Disbursements Purposes	Determination of Financing Amount to Be Disbursed against Achieved and Verified DLI Value(s) [a]
DLI-1	Minor Maintenance	42,000,000	0	Program closure date	n.a.	60,000 m	Disbursement = # of verified meters × US$700
DLI-2	Major Maintenance	43,000,000	0	Program closure date	n.a.	25,000 m	Disbursement = # of verified meters × US$1,720
DLI-3	Rehabilitation	75,000,000	0	Program closure date	n.a.	24,000 m	Disbursement = # of verified meters × US$3,125
DLI-4	Capacity Expansion	40,000,000	0	Program closure date	n.a.	5,000 m	Disbursement = # of verified meters × US$8,000
DLI-5	Replacement and New Construction	163,000,000	0	Program closure date	n.a.	20,000 m	Disbursement = # of verified meters × US$8,150
DLI-6	Implementation and updating of RuBIMS	10,000,000	0	Program closure date	n.a.	4 nos.	Disbursement = US$2,500,000 upon each verified completion
DLI-7(a)	Percentage of national competitive tenders issued using e-contract management module of e-governance procurement	3,000,000	0	Program closure date	0 percentage	60 percentage	Disbursement = US$3,000,000 × {(verified percentage – baseline percentage) / (maximum percentage – baseline percentage)} – last cumulative disbursement
DLI-7(b)	Percentage of work contracts completed within the original contractual timeline	4,000,000	0	Program closure date	30 percentage	70 percentage	Disbursement = US$4,000,000 × {(verified percentage – baseline percentage) / (maximum percentage – baseline percentage)} – last cumulative disbursement
DLI-7(c)	Effective and efficient Fiduciary System Management	3,000,000	0	Program closure date	n.a.	3 nos.	Disbursement = US$1,000,000 upon each verified completion

#	DLI	Bank Financing Allocated to the DLI (US$)	Of which Financing Available for Prior Results	Deadline for DLI Achievement	Minimum DLI Value to Be Achieved to Trigger Disbursements of Bank Financing	Maximum DLI Value(s) Expected to Be Achieved for Bank Disbursements Purposes	Determination of Financing Amount to Be Disbursed against Achieved and Verified DLI Value(s) [a]
DLI-8(a)	Adaptation and operationalization of GRS	5,000,000	0	Program closure date	n.a.	5 nos.	Disbursement = US$1,000,000 upon each verified completion
DLI-8(b)	Development and operationalization of smartphone-based field inspection application	5,000,000	0	Program closure date	n.a.	5 nos.	Disbursement = US$1,000,000 upon each verified completion

Note: [a] Specify the formula determining the level of World Bank financing to be disbursed on the basis of level of progress in achieving the DLI, once the level of DLI achievement has been verified by the World Bank. Such formula may be of various types, including pass/fail, linear, or other types as may be agreed between the World Bank and the borrower.

Annex 3: Technical, Fiduciary Systems, and Social and Environmental Systems Assessment Identified Risks and Mitigation Measures

1. The technical, fiduciary systems, and social and environmental systems assessments were carried out to meet the requirements of Program-for-Results Financing Policy and Directive. The following sections provide summary technical, fiduciary systems, and social and environmental risks and the mitigation measures included in the Program design.

Technical Risks

2. The Program's technical risk rating is judged as 'Substantial'. The following table summarizes proposed mitigation measures against the key technical risks.

Table 3.1: Technical Risks and Mitigation Measures

Desired Result	Key Technical Risks	Proposed Mitigation
Prioritization process for investments in rural bridge maintenance, rehabilitation, widening, and new construction uses a technically rigorous system	• Prioritization system is not followed • Prioritization system is not based on objective decision framework	• The verification protocol of DLIs 1–3 requires that the interventions are selected using RuBIMS. • RuBIMS uses objective decision criteria in its prioritization process.
Maintenance and rehabilitation of bridges receives appropriate attention	• Insufficient funding resources allocated to the maintenance • Diversion of maintenance funding to new bridges	• Separate DLIs for bridge maintenance • Budgetary separation of bridge maintenance and new construction
The LGED has adequate capacity for planning, design, maintenance, and management of rural bridges	• Poor planning and design of bridges leading to unsustainable sectoral impact • Poor quality of Program physical outputs	• Program has capacity building and institutional strengthening provisions. • Program has provisions for outsourcing activities. • Annual comprehensive technical audits will be done. • Process DLIs will incentivize improvements to occur.
The LGED implements the Program on time by using the optimum amount of resources	• Delay in Program implementation and non-achievement of DLIs because of the LGED's unfamiliarity with the PforR instrument	• POM is being be prepared highlighting PforR processes. • Institutional strengthening will mitigate against such risks.
Insufficient budget provisions and erratic release of funds	• Outputs could not be achieved on time.	• Result-based disbursement - DLIs will not be achievable without minimum Government resources and completed results.
Adoption of appropriate procurement process and methods and contract management process	• Non-achievement of basic procurement principles for rural bridges: value for money, economy, integrity, fit for purpose, efficiency, transparency, and fairness	• DLIs designed to ensure appropriate contract management. • Annual comprehensive technical audits will also cover procurement aspect of the Program.

Fiduciary Systems Risks

3. Fiduciary systems assessment has identified fiduciary risks and related mitigation measures, which are shown in the following table.

Table 3.2: Fiduciary Risks and Mitigation Measures

Issues/Weaknesses	Mitigation		Responsible Institution
	Measures	Instruments	
Existing accounting software (iBAS) is inadequate in its current state in handling Program's accounting and reporting requirements	• MoF will implement iBAS++ by FY2018 to cover all CAO offices to handle all Program accounting and reporting requirements.	National Public Finance Management strategy	MoF
Delays in the preparation of financial statements. Inefficient reconciliation processes between spending units and accounts offices	• iBAS++ will ensure timely preparation of Program's financial statement. The Government has agreed to fast-track the reconciliation process to consolidate the financial statements within 3 months from the fiscal year end. The LGED will hire a pool of consultants to aid day-to-day accounting and financial reporting to facilitate the reconciliation.	PAP	CAO/ LGED
Delays in completing external audits by the C&AG	• Submission of program external audit report by March 31 each year. The new organizational reform at the C&AG office will make the respective directorate more focused on the Program audits and, therefore, the delivery will be more efficient.	Financing Agreement	C&AG/ LGED
Difficulty in Program expenditure tracking given the existence of a single code in the LGED's accounting system to book road and bridge maintenance expenses	• At least two separate budget economic codes (one for development and one for maintenance of bridges) will be created	PAP	LGED/ MoF
Delay in releasing the budget allocations due to a delay in approving annual operational plan	• Preparation and approval of annual operational plan by May 31 each year	Program implementation monitoring	LGED/ MoF
Poor quality and late completion of audit reports is an issue.	• C&AG to upgrade the Audit Management and Monitoring System software and the maintenance of the data center	Program implementation monitoring	C&AG
Delays in the resolution of audit observations—both internal and external audits	• Constitution of an audit observation resolution committee at the LGD that will meet biannually with the aim to take appropriate action in resolving at least 80% audit issues by fourth year of the Program.	DLI	LGD
Weak internal audit capacity at the LGED that increases the financial control risks	• Internal audit operationalized with appropriate level of	PAP	LGED

Issues/Weaknesses	Mitigation		Responsible Institution
	Measures	Instruments	
	capacity and mandate		
• Funds may not be used for the intended purpose of the Program • Noncompliance with the procurement act and related regulations	• Conduct annual integrated technical, fiduciary, social, and environmental review by a firm (Measurement: Review completed annually on at least 10% randomly selected contracts)	PAP	LGED
• Delays in procurement process leading to non-achievement of DLIs in a timely manner • Engagement in collusive and coercive practices during tender submission	• Process all National Competitive Tenders under the Program through the national e-GP system • (Measurement: Integrated technical and fiduciary review auditor will annually check the compliance status of the mitigation measure. In addition, the DLI verification consultant will also check it as this requirement will be placed under the DLI verification protocol.)	DLI and verification protocol	LGED
• Risks of time overrun of Program contacts resulting in a delay/failure in achieving the DLIs • Risks of cost overrun not achieving the outputs within optimum financial inputs	• Effective contract management through electronic system: (a) Percentage of National Competitive Tenders' using e-CM module of the e-GP (b) Percentage of works contracts completed within the original contractual time line	DLI	LGED
Public Procurement Act 2006, due to some recent amendments, contains several provisions (for example, tenders invited or rejected based on percentage above or below the estimated cost, use of lottery) that are not consistent with international good procurement practices and spirit of the open tendering method ensuring fair treatment toward the tenderers. These provisions may encourage inappropriate tendering practices. Selecting contractors without any prior experience may lead to poor quality works and implementation delay.	• In case of Open Tendering Method, (a) tenders shall not be invited or rejected based on percentage above or below the estimated cost and (b) lottery shall not be allowed to award contracts. (Measurement: This will be mentioned in the Financing Agreement. The integrated technical and fiduciary review auditor will annually check the compliance status of the mitigation measure.)	Condition of Financing Agreement and DLI verification protocol	LGED
Selecting contractors without any prior experience may lead to poor quality works and implementation delay.	• For all procurements under the Program, tenderers' qualification/experience requirement shall be mandatory. (Measurement: This	Condition of Financing Agreement and verification protocol	LGED

Issues/Weaknesses	Mitigation		Responsible Institution
	Measures	Instruments	
	will be mentioned in the Financing Agreement. The integrated technical and fiduciary review auditor will annually check the compliance status of the mitigation measure.)		
Inadequate system in place in the LGED to register procurement-related complaints and monitor its resolution status	• Develop an electronic complaint register and management system, which will be aligned with the e-GP complaint handling system	PAP	LGED
Lack of strategic analysis to determine the optimum procurement package size, procurement method, contracting modality, and duration of the contract leads to non-attainment of the development outcome within optimum cost and time.	• Prepare a Procurement Strategy Document for the Program in agreement with the Association	PAP	LGED and the Association
Over emphasizing the inputs of procurement (specifications, quantity, and so on) rather than output of the procurement (performance standard, service level, timeliness of completion, and so on) resulting in project/program implementation delay, cost overruns, and poor-quality infrastructures	• Train 300 LGED officials on performance-based contracts, including imposition of milestone-based liquidated damage. • At least 30% of the new bridge construction contracts will be milestone-based contracts.	Support under Program's IPF component and PAP	LGED

Environmental and Social Risks

4. Given the scope of the Program, its type and scale of investment, geographic focus, and experience with Association funded projects of the Government, the overall environmental and social risk is judged as 'Substantial'. Section IV-C discusses Program's environmental and social risks arising out of Program's proposed activities. The following table provide ESSA recommended measures and their inclusion in the Program design.

Table 3.3: ESSA Recommended Measures and Program Design

Recommended Measures	Program Design Response
The Program will use the LGED's current Environmental and Social Management Framework (ESMF).	• Use of the ESMF will be is included in the verification protocol • Program comprehensive technical audits will ensure the use ESMF in mitigating environmental and social risks. • ESMF provisions are being included in the POM.
The LGED will develop a sustainable institutional structure for managing social and environmental risks and impacts across the department. This will include the establishment of an Environmental and Social Management Unit with adequate number of staff at its headquarters	One PAP action requires the establishment of the Environmental and Social Management Unit

Recommended Measures	Program Design Response
The LGED will continue its ongoing training in environmental and social areas. This will help enhance its environmental and social risk management capacity	Provisions made in the Institutional Strengthening and Capacity Building component
Conditions and activities to be undertaken by child laborers will be according to the provisions outlined in the local law and International Labour Organization (ILO) Convention on Worst Form of Child Labour.[24] Contract documents will include specific clauses on this. Program worksites will display standard signboards that will elaborate conditions for employing child laborers. The Program will engage a third party to monitor the compliance to these requirements	Recommendation included in the Program design. See Table 10.
The LGED will take appropriate actions to prevent and minimize labor influx, child labor, and gender-based violence risks. The specific actions will include the development of site-specific labor management plans. The contractor will deploy site-specific community coordinators for facilitating the management of social issues (for example, labor influx, child labor, gender-based violence) for contracts over a certain financial threshold (BDT 40 million; US$500,000).	Same as above
A comprehensive LGED-wide GRS will be developed for registering and resolution of all grievances, including Program-related grievances. The system will be developed following the Government's October 2015 directives. The system will able to register and resolve grievances lodged at different levels (project/program, *upazila*, district, and headquarters).	Adaptation and operationalization of the GRS is a DLI (DLI-8)

[24] C182 - Worst Forms of Child Labour Convention, 1999 (No. 182).
(http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C182)

Annex 4: Institutional Strengthening and Capacity Building Component Details

1. The IPF component aims to complement LGED's effort in institutional strengthening and capacity building plus to support Program implementation. An analysis has facilitated the selection of activities for this component. Preference was given to those activities that satisfy one or more of the following criteria: (a) activities that are fundamental for Program's integrity and governance; (b) activities that are essential for Program's sustainability; (c) activities that have impacts not only on the Program, but also on LGED-wide processes; (d) activities that are crucial for the achievement of Program DLIs, PAP and aid in the adoption of modern bridge technology. The following table provides the linkages between selected activities under the component and different identified criteria.

Support Elements	Program's integrity and governance	Program's sustainability	LGED-wide impact	DLI, PAP and adoption of modern technology
Program Implementation Support				
Program coordination and monitoring	√	√		√
Planning, design and other technical areas		√		√
Bridge asset management including RuBIMS	√	√	√	√
Digital development & GIS	√	√	√	√
Comprehensive technical audits	√			√
Procurement, financial management & audit	√	√	√	√
Environmental and social risk mitigation, labor influx, SEA, OHS	√	√	√	√
Goods, equipment and facilities		√		√
DLI verification	√			√
Institutional Strengthening and Capacity Building				
Information and communication technology		√	√	√
Bridge design and maintenance capacity building. Strengthening Capacity of Internal Audit Unit of LGED		√	√	√
Environmental and social capacity building		√	√	√
Procurement and financial management capacity building	√	√	√	√
Transparency and accountability	√	√	√	√
Communication, branding and outreach	√		√	
Others				
Preparation of potential transport projects and related analytical studies	n.a.	n.a.	n.a.	n.a.

2. The IPF component will focus on three areas with a total allocation of US$ 32 million. They are: (a) support to program implementation: (b) institutional strengthening and capacity building; (c) other support. A summary of costs summary is provided below and Table 4.1: provides the component activity details with costing.

Areas	Resources
Support for Program Implementation	US$ 23.0 million (Inputs from 7 nos. of firms and 15 nos. of individual consultants)
Institutional Strengthening and Capacity Building	US$ 7.5 million (Inputs from 8 nos. of firms)
Others (potential transport project preparation and related studies)	US$ 1.5 million
Total	US$ 32.0 million

Implementation arrangements

3. The component implementation will be led by the program coordination unit. The unit will be headed by the additional chief engineer (maintenance, asset management and road safety). Other offices at the LGED headquarters will help the program coordination unit in the implementation of the component. The other units include the GIS unit, procurement unit, audit unit, training unit, quality control unit.

Safeguards

4. The IPF component does not include any civil works. The component will mainly support institutional strengthening, capacity building and program implementation support activities. Nonetheless, the component will also include analytical support for the preparation of new rural transport operations. The analytical studies may propose new rural transport operations, which are likely to be associated with environmental and social risks and impacts. However, given the experience of ongoing RTIP-II (P123828), none of the operations are likely to be of high risk/A Category from environmental and social impact viewpoints. Based on these considerations, the IPF component is classified as Environmental Category "B".

5. World Bank's six safeguards policies are triggered for this component. The triggered policies are: OP/BP 4.01 (Environmental Assessment); OP/BP 4.04 (Natural Habitats), OP/BP 4.36 (Forests), OP/BP 4.11 (Physical Cultural Resources), OP/BP 4.10 (Indigenous People) and OP/BP 4.12 (Involuntary Resettlement) are triggered.

6. The component will be required to prepare several documents. The project/program preparation studies will undertake environmental and social impact assessments (ESIA) of projects/programs, which will include the review of the existing national systems for impact analysis and preparation of management plans in compliance with the national systems and the World Bank's safeguards policies. Terms of reference will be developed as part of the ESIA for in-depth investigation for future implementation of the projects, and preparation and implementation of subprojects under those projects. Depending on analysis outcomes, the ESIA will prepare environmental management plan, resettlement action plans and Small Ethnic Community Development Plans (SECDPs). The draft ESIA and management plans will be subject to consultation prior to finalization.

Financial Management, Disbursement and Procurement

7. The Financial Management Arrangements. The arrangements of the IPF component will be like the on-going RTIP II (P123828). The program coordination unit at headquarters will be responsible for the overall financial management of the institutional strengthening and capacity building component. The financial management related duties of the unit will include the operation of the Designated Account and e-submission of withdrawal requests to the Association; processing the bills for procurement of goods, services and operating expenditures; preparation of annual budgets, revised budgets and six monthly disbursement forecasts; maintenance of books and records for audit and inspection; preparation of bank reconciliation statements; submission of quarterly financial reports to the Association; and preparation of

annual financial statements and other periodic reports for the line ministry and other GoB agencies and the auditors.

8. Financial Management System. As mentioned before, the LGED has developed a uFMS with support from RTIP II, which is currently being used by more than 20 GoB and DP funded projects. IPF component of this operation will use the uFMS for its financial management including generation of interim un-audited financial reports (IUFRs).

9. Fund Flow and Disbursement Arrangements. The Association's funds for IPF component will flow to a Designated Account in the form of Convertible Taka Special Account (CONTASA). The account will be opened in a branch of a commercial bank acceptable to the Association. Disbursements will be made based on the interim unaudited financial reports (IUFRs). The reports will be sent to the Association within 45 days from the end of each quarter. The IUFRs will be prepared in an agreed format and supported by appropriate sets of documents and evidences.

10. Auditing Arrangements. Foreign Aided Projects Audit Directorate (FAPAD) under C&AG will be responsible for the auditing of the IPF component annually. The project's financial statements will be generated by the same authority each year and the reports will be submitted to the Association within Nine months from the end of each financial year. The audited financial statements will be made available for public disclosure.

11. Procurement Arrangements. The World Bank's 'Procurement Regulations for Borrowers under Investment Project Financing'", dated July 1, 2016 (Revised November 2017) (Procurement Regulations), will be applied for all procurements under the institutional development and capacity building component. LGED's program coordination unit will be responsible for all procurements under the IPF component. The unit will be supported by the procurement unit and other relevant technical units of LGED. The LGED has prepared a Project Procurement Strategy for Development (PPSD). The strategy document has spelled out the detailed procurement arrangements. They include procurement packaging strategy, methods, bid evaluation methodology of major packages, timeline, contracting arrangements for the component including the risk mitigation measures.

12. An initial Procurement Plan for the IPF component has also been prepared containing all procurement activities to be financed under the IPF component. Component procurement activities will include consultancies, goods and non-consulting services. The operation will introduce a Systematic Tracking of Procurement Exchanges system (commonly known as STEP) for managing the Procurement Plan and procurement transactions under the component. Furthermore, World Bank's standard procurement documents (or other documents agreed with the Bank) will be used for all procurement activities. The Association will only prior review the procurement activities specified in the procurement plan, the remainder will be post reviewed by the Association. The program coordination unit will appoint two procurement consultants to facilitate procurements under the component. These consultants will provide need-based procurement support to other units for activities under this operation, and collect operation's procurement management information.

Anti-Corruption Guidelines

13. Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants of July 1, 2016 will be applicable for the IPF part of the operation.

Table 4.1: Component Details and Costing

Activity No.	Activity	Activity Description	Amount (US$m)
Support for Program Implementation			
1	Program coordination and monitoring	▪ Assisting Program Coordinator to implement the Program ▪ Supporting estimation, tender document preparation and procurement of Program scopes ▪ Supporting for monitoring survey & field assessment of bridges ▪ Supporting for monitoring of all ongoing construction works of bridges ▪ Supporting for reviewing bills & technical documents of construction works of bridges ▪ Supporting for monitoring post condition assessment of bridges	0.7
2	Planning, design and other technical areas	▪ Supporting bridge technical survey and sub-soil investigation ▪ Supporting hydrological analysis for bridges ▪ Supporting the typical and innovative structural design of bridges ▪ Supporting the preparation and as-built drawing for bridges ▪ Providing technical supports for condition assessment and structural audit of existing bridges ▪ Supporting maintenance, rehabilitation and retrofitting solutions to existing bridges	3.3
3	Bridge asset management including RuBIMS	▪ Supporting condition assessment, selection and prioritization of bridges ▪ Supporting rural bridge asset management ▪ Supporting bridge asset management training ▪ Supporting for collecting UZRs and UNRs bridge and gap data across the country ▪ Supporting for updating bridge inventory in RuBIMS using collected data	5.8
4	Digital development & GIS	▪ Supporting the development and maintenance of e-governance infrastructure ▪ Supporting operation, maintenance and enhancement of different web applications for the Program ▪ Supporting data collection and development of spatial database of bridges	0.6
5	Comprehensive technical audits	▪ Integrated technical audits (technical, fiduciary and safeguard) for bridge maintenance and construction under the Program	0.5
6	Procurement, financial management & audit	▪ Supporting the procurement, financial management & internal audit sections of LGED for Program activities	1.1
7	Environmental and social risk mitigation, labor influx, SEA, OHS	▪ Supporting for Involvement of Local organization/ NGOs for monitoring and training on labor influx, OHS facilities in Program Area	0.60
8	Goods, equipment and facilities	▪ Providing necessary testing and measuring equipment for ensuring the quality of construction works	8.4

Activity No.	Activity	Activity Description	Amount (US$m)
		▪ Providing workstation, office furniture and other office facilities for Program operation.	
9	DLI verification	▪ Supporting IMED for DLI verification	1.3
Sub-total			**23.0**
Institutional Strengthening & Capacity Building			
1	Information and communication technology	▪ Developing of implementation of Integrated Decision Support System (IDSS) for LGED Operator, Maintenance and enhance web applications	3.7
2	Bridge design and maintenance capacity building	▪ Updating and development of bridge & road specifications, standards, guidelines & manuals ▪ Developing laboratory management software ▪ Preparing bridge health inspection manuals including training ▪ Preparing design manual on bridge type design standard, network arch bridges etc. Supporting BIWTA to review & update navigation clearance of rural bridges	2.5
3	Environmental and social capacity building	Updating ESMF for overall transport sector under LGED	0.5
4	Procurement and financial management capacity building	Preparation of a Procurement Strategy Document for the Program in agreement with the Association	0.1
5	Transparency and accountability	▪ Formulating LGED specific Grievance Redress System (GRS) Guidelines in line with the Cabinet Division's guidelines Operationalize National GRS in LGED Developing app & web-based Grievance Redress System (GRM)	0.2
6	Communication , branding and outreach	▪ Develop an information pac (visual and print) through showcasing LGED achievements for public dissemination including various days and event like national development fair. Produce branding items (e.g. pen, coat pin, penholders, coffee mug, tie, photo frame, diary/note etc.).	0.4
7	Others	Preparation of potential transport projects and related analytical studies	1.5
Sub-total			**9.0**
Total			**32.0**

Annex 5: Program Action Plan

Action Description	DLI or Other Links	Due Date	Responsible Party	Completion Measurement
Technical Actions				
i. Develop a POM that includes Program planning, implementation, and M&E aspects	Facilitation of overall Program operation	June 30, 2019	LGED	POM developed and adopted through an administrative order
ii. Develop and formalize the following rural bridge guidelines: (a) Bridge inspection and condition assessment guidelines (b) Bridge maintenance guidelines	DLIs 1–5 and Program's business processes	June 30, 2020	LGED	Guidelines available and administrative order(s) available formalizing them
iii. Develop terms of reference for comprehensive technical audits (technical, fiduciary, and social and environmental), appoint a consulting company for conducting such audits for a sample of completed bridge contracts under the Program every year.	DLIs 1–5	Ongoing	LGED	Comprehensive technical audit reports are produced and formally issued.
iv. Develop, formalize, and implement guidelines for the planning, design, and implementation of climate-resilient rural bridges.	DLIs 3–5 and climate resiliency of Program bridges	Development, formalization by June 30, 2020 and then ongoing implementation	LGED	a. Guidelines available and they are formalized through an administrative order b. Use of guidelines in the planning, design, and implementation of climate-resilient bridges
v. Develop norms and update the LGED schedule of rates as per accepted recommendations of the U.K. Department of International Development (DFID) supported climate-resilient reinforced concrete structures study or any other studies linked climate resilient reinforced concrete in the marine environment.	DLIs 2–5 and climate resiliency of Program bridges	June 30, 2019	LGED	Updated Schedule of Rates formally approved by the LGED through appropriate administrative process.
Improvement of Systems cum Business Process				

Action Description	DLI or Other Links	Due Date	Responsible Party	Completion Measurement
vi. Prepare and update (at least annually) a Procurement Strategy Document for the Program	Program's efficiency	December 31, 2018	LGED	Strategy document endorsed by the LGED management
vii. Develop and make operational an electronic procurement related complaint-register and complaint management system	Program's transparency and fairness to all bidders	September 30, 2019	LGED	a. System available online b. The LGED submits summary reports on the number of complaints received and resolved in Program's regular reporting
Improvement of Agency Capacity and Performance				
viii. Strengthen the internal audit team with appropriate staffing and mandate.	DLI-7	September 30, 2019	LGED	Administrative order issued in this regard
ix. Establish a separate Environmental and Social Management Unit with appropriate staff resources for managing environmental and social risks within an agreed time frame	Program's environmental and social risk management and sustainability	July 31, 2019	LGED	a. Administrative order of establishment of an Environmental and Social Management Unit available b. Staff appointed or staffed
Risk Mitigation				
x. Create separate economic codes for the following: (a) repair, maintenance, and rehabilitation of rural bridges (within Economic Codes 4900–4999) and (b) construction of rural bridges (within Economic Codes 7000–7099)	Program expenditure tracking	September 30, 2018	MoF/ LGD/ LGED	Codes created and used by the Program
xi. Appoint an NGO for providing comprehensive support to the LGED in managing the Program's SEA risks.	SEA risk management	September 30, 2019	LGED	An NGO appointed and reports available from the firm or the NGO
xii. Appoint a third-party (a consultancy firm or an NGO) for monitoring, reporting, and managing the Program's labor influx, OHS issues, and child labor engagement issues.	Program's labor influx, OHS, and child labor-related risk management	September 30, 2019	LGED	A consultancy firm or NGO appointed and reports available from the firm or NGO

Annex 6: Climate Co-Benefits Rationale

Project Development Objective (PDO)	To improve and preserve rural bridges to support connectivity and **climate resiliency**, and strengthen institutional management.
PDO Indicator	**PDO 2:** *Upazila* or *union* road new bridges built or replaced with climate resilient features in 19 coastal districts
Program Actions	(a) Physical interventions with an aim of incorporation of optimal climate adaptation measures. (b) Developing guidelines for the planning, design, and implementation of climate-resilient rural bridges. (c) Developing norms and updating the LGED schedule of rates as per accepted recommendations of the U.K. Department of International Development (DFID) supported climate-resilient reinforced concrete structures study or any other studies linked climate resilient reinforced concrete in the marine environment (d) Procuring modular bridges (or prefabricated concrete bridges) and storing them at strategic locations for quick restoration of rural connectivity severed due to natural extreme events (for example, floods, storm surges).
Project Area	**61 out of 64 districts (covering about 91% geographical area of Bangladesh)**
Program Financing	**IDA contribution US$ 425m, Total US$ 618m**
Vulnerability Context	**Key risk drivers of Climate change on rural bridges include:** (a) Sea level rise and coastal inundation. (b) Tidal flooding. (c) Salinity intrusion. (d) Cyclone and storm surges. (e) Rainfall drainage and water logging. (f) Temperature increase. **Climate change impacts on rural bridges include:** (a) Disruption/discontinuation of the rural road networks due to sudden collapse of bridges caused by storm surge, flash flood; (b) A reduction of serviceability of bridges because of drainage congestions, over toping, shifting channel flows, embankment erosions, and reduction of navigational clearances; (c) A reduction of bridges' service lives due to increase in temperature, rainfall, sea level rise, and salinity, especially in coastal districts; and (d) An increase in Program costs from bridge construction and maintenance cost to offsetting climate change effects.
Motivation	One of the primary drivers of the operation has evolved from the need for better climate change adaptation, given Bangladesh's noteworthy vulnerability to climate-change phenomenon. The operation plan to introduce climate resilient interventions in all its activities (see below). One of the motivations for undertaking rural bridge construction and maintenance activities under this operation is to enhance LGED's institutional capacity to plan, construct and manage the rural bridge sub-sector more comprehensively in adapting and mitigating (to a lesser extent) climate change related risks.

Activity Linkage	The Program will support several activities to help the LGED in rural bridge climate change adaptation. They include: **Activity 1:** Continuous need based maintenance of rural bridges to improve their serviceability & service life against key risk drivers of climate change Such as **Activity 1.1** ▪ Cleaning, Removal & Disposal to clear out desilt water ways of bridges. ▪ Restoring the original water course by cleaning debris within 150m of structure ▪ Refilling of earthwork of settled/eroded embankments. ▪ Approach slope protection in order to prevent breached/ damaged approach road due to flood/ heavy rainfall. ▪ Re-sealing/Overlays of approaches due to heavy rainfall/ flood. ▪ Repairing/replacement of damaged drainages systems, replace drainage pipes etc. to perform properly during heavy rainfall. ▪ Sustainable painting/ protective paints (anti-corrosive paints in coastal areas) against current and future weathering effects. ▪ Emergency maintenance due to climate change and natural disasters. **Activity 1.2** ▪ Repair/ retrofitting of structural components of bridges considering current & future climate change impacts (saline intrusion, heavy rainfall, extensive high temperature, earthquake etc.). ▪ Construct/Repair/Reconstruct approach embankment and protective works of approaches, etc. due to erosion. ▪ River training works to protect existing bridges. **Activity 1.3** ▪ Widening of bridge adopting incorporating required climate resilience features. **Activity-2.** Developing climate change adaptation guidelines for planning, design, and implementation of rural bridges and culverts. **Activity 3.** Implementing of marine concrete (recommended by DFID supported studies or any other studies on marine concrete) for new construction & maintenance of rural bridges to enhance the durability of structure against salinity, especially in 19 coastal districts. **Activity 4.** Construction of New bridges/ culverts to resist breeching of road network & reduce drainage congestion due to heavy rainfall, storm surge and flash flood (focusing on agricultural activities areas). **Activity 5.** Implementation of modern technologies for new bridge construction and different maintenance activities for adaptation to climate change such as: ▪ Designing of new bridges with a design life of 75 years (AASHTO LRFD Bridge Design Specifications, sixth Edition). ▪ Replacing existing bridges & gaps with larger clear-span bridges for widening waterway capacity, reducing of Scouring & sedimentation at river bed level etc. ▪ Reducing the depth of girder of bridges to increase navigation clearance. ▪ Introduction of composite, network-arch & cable strut type bridges depending on geographical locations & climate change impacts. **Activity 6.** Procuring modular bridges and storing them at strategic locations for quick & emergency restoration of rural connectivity severed due to natural extreme events (for example, floods, storm surges). **Activity 7.** Improving the LGED's climate change adaptation and decision-making capacity for rural bridges through training and research; the research areas including in the preparation of climate hazard maps and pinpointing mitigating interventions through GIS. **Activity 8.** Citizen engagement during the design of bridges to gather local knowledge on the climate change effects and to incorporate climate risk mitigation design features. Also ensuring citizen engagement during construction to facilitate the inclusion of climate risk related features in bridges.

Incremental Costs	Although it is difficult to estimate the incremental costs of climate change related activities (especially Activity 3 to 5, mentioned above), depending on the climate change related vulnerability of districts, the climate adaptation incremental costs could well be in the region of 30 (least vulnerable) to 60 percent (most vulnerable). Also, it is to be noted that requirements of replacement and construction of new bridges are significantly higher in climate vulnerable districts as many bridges in these districts are out of use and replacement due to damages caused by climate change events (sea level rise, tidal flooding and salinity). Also, these districts need higher number of new bridges due to their location (existence of many rivers and canals). An initial estimate suggests that existing gaps in 19 coastal districts comprise 37 percent of the total gaps and 40 percent of the total existing bridges on UZRs and UNRs.
Specific Intent	All Program activities will help in building resilience and adaptive capacity in rural bridges subsector. These activities range from minor maintenance to major maintenance to new construction of bridges to institutional development. The activities, which help in building resilience and adaptive capacity, include: (a) Improving planning, design and technical specification parameters for rural bridge to make them climate resilient, especially in coastal districts; (b) Improving or preserving rural connectivity through the maintenance, rehabilitation and new construction of rural bridges, which will help improving network efficiency; (c) Capacity building of government officials in identifying climate related risks and implementation of rural bridge adaptive measures; (d) Improving informed rural bridge related decision making through climate related research on rural bridges; and (e) Overall, the Program is expected to substantially contribute to the implementation of the one of the four pillars of the GoB's 2009 climate change adaptation strategy.

MAP


BANGLADESH
PROGRAM FOR SUPPORTING RURAL BRIDGES
PROGRAM DISTRICTS
NATIONAL HIGHWAYS
REGIONAL HIGHWAYS
ZILA ROADS
DIVISION CAPITALS
NATIONAL CAPITAL
DISTRICT (ZILA) BOUNDARIES
DIVISION BOUNDARIES
INTERNATIONAL BOUNDARIES
INDIA
INDIA
INDIA
MYANMAR
RANGPUR
RAJSHAHI
MYMENSINGH
SYLHET
DHAKA
KHULNA
BARISHAL
CHATTOGRAM
Rajshahi
Sylhet
Khulna
Barishal
Chattogram
DHAKA
Jamuna Bridge
Mouths of the Ganges
Bay of Bengal
BANGLADESH
0 25 50 Kilometers
0 25 50 Miles
IBRD 43611 | APRIL 2018
This map was produced by the Cartography Unit of the World Bank Group. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.