



**GREEN  
CLIMATE  
FUND**

**Meeting of the Board**  
2 – 5 November 2015  
Livingstone, Republic of Zambia  
Provisional Agenda Item 14\*

**GCF/B.11/04/Add.04**

**15 October 2015**

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# Consideration of funding proposals – Addendum

## Funding proposal package for FP004

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### **Summary**

This addendum contains the following two parts:

- (a) A funding proposal entitled “Climate Resilient Infrastructure Mainstreaming in Bangladesh” submitted by KfW Development Bank; and
- (b) A no-objection letter issued by the national designated authority or focal point.

These documents are presented as submitted by the accredited entity and the national designated authority or focal point, respectively.

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\* The agenda item number will be determined when the final sequence of items in the provisional agenda is confirmed by the Co-Chairs.

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Funding proposal submitted by the accredited entity

No-objection letter issued by the national designated authority or focal point



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# Funding Proposal

Version 1.0

**The Green Climate Fund (GCF) is seeking high-quality funding proposals.**

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

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### *Note to accredited entities on the use of the funding proposal template*

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

**Please submit the completed form to:**

[fundingproposal@gcfund.org](mailto:fundingproposal@gcfund.org)

Please use the following name convention for the file name:

“[FP]-[Agency Short Name]-[Date]-[Serial Number]”

A.1. Brief Project / Programme Information		
A.1.1. Project / programme title		Climate Resilient Infrastructure Mainstreaming (CRIM)
A.1.2. Project or programme		Project
A.1.3. Country		Bangladesh
A.1.4. National designated authority (ies)		Economic Relations Division, Ministry of Finance
A.1.5. Accredited entity		KfW
A.1.5.a. Access modality		<input type="checkbox"/> Direct <input checked="" type="checkbox"/> International
A.1.6. Executing entity / beneficiary		Executing Entity: Local Government Engineering Department Beneficiary: Population of Bhola, Barguna and Satkhira
A.1.7. Project size category (Total investment, million USD)		<input type="checkbox"/> Micro ( $\leq 10$ ) <input type="checkbox"/> Small ( $10 < x \leq 50$ ) <input checked="" type="checkbox"/> Medium ( $50 < x \leq 250$ ) <input type="checkbox"/> Large ( $> 250$ )
A.1.8. Mitigation / adaptation focus		<input type="checkbox"/> Mitigation <input checked="" type="checkbox"/> Adaptation <input type="checkbox"/> Cross-cutting
A.1.9. Date of submission		3 August 2015 (revisions from 31 August 2015, 10 September 2015 and 25 September)
A.1.10. Project contact details	Contact person, position	Johannes Scholl, Project Manager
	Organization	KfW
	Email address	<a href="mailto:Johannes.scholl@kfw.de">Johannes.scholl@kfw.de</a>
	Telephone number	+49-69-7431-8935
	Mailing address	Palmengartenstr. 5-9, 60325 Frankfurt, Germany

A.1.11. Results areas (mark all that apply)	
<b>Reduced emissions from:</b>	
<input type="checkbox"/>	Energy access and power generation (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)
<input type="checkbox"/>	Low emission transport (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)
<input type="checkbox"/>	Buildings, cities and industries and appliances (E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)
<input type="checkbox"/>	Forestry and land use (E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)
<b>Increased resilience of:</b>	
<input checked="" type="checkbox"/>	Most vulnerable people and communities (E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)
<input type="checkbox"/>	Health and well-being, and food and water security (E.g. climate-resilient crops, efficient irrigation systems, etc.)
<input checked="" type="checkbox"/>	Infrastructure and built environment (E.g. sea walls, resilient road networks, etc.)
<input type="checkbox"/>	Ecosystem and ecosystem services (E.g. ecosystem conservation and management, ecotourism, etc.)

## A.2. Project / Programme Executive Summary (max 300 words)

The Climate Resilient Infrastructure Mainstreaming (CRIM) project integrates climate change adaptation systematically into decision-making for infrastructure planning, supervision and maintenance of the Local Government Engineering Department (LGED), responsible for local infrastructure throughout Bangladesh. A dedicated Climate Resilient Local Infrastructure Centre (CReLIC) – a Centre of Excellence – is created within LGED. Complementary to the CReLIC's institutional set up, the project finances pilot local infrastructure, designed to optimize climate change resilience in some of the country's most vulnerable districts.

As a result, the project increases directly the adaptive capacity of more than 134,000 people to climate change. Indirectly, 10.4 million people (6.8 percent of the total population of the country) will benefit from climate resilient infrastructure planning and implementation in the long term.

With an annual investment budget of more than one billion US\$, LGED is responsible for more than ten percent of all annual public investments (mainly roads, public buildings and drainages) in Bangladesh. The CReLIC will be established as a permanent unit within LGED and serve as a think tank and knowledge hub to mainstream climate resilience into all LGED activities. The Centre will trigger a step-wise institutional learning process all over the LGED infrastructure portfolio and pilot innovations directly in LGED operations through investments in rural and urban pilot infrastructures in three of the country's most vulnerable and poor coastal districts: Bhola, Barguna and Satkhira. The project builds 45 new multipurpose cyclone shelters, rehabilitates 20 existing shelters to a climate-proof standard, provides 80 km of critical road connectivity and provides climate resilient urban infrastructure in the city of Satkhira. The new built shelters follow an innovative state of the art multi-purpose design and will be used throughout the year as primary schools.

The project has important direct co-benefits, such as the creation of more than 1,700 full-time jobs, education support to more than 18,000 children and the reduction of local transport costs by an estimated average of more than 20 percent. The gender-friendly design of infrastructure, particularly multipurpose cyclone shelters, contributes to gender equality in development. The institutional reform within LGED will trigger a paradigm shift by transforming the business as usual development to a climate resilient and sustainable local infrastructure development all over Bangladesh.

The project has an overall volume of 80 million US\$. A grant of 40 million US\$ is requested from the GCF. Through KfW, the German Government provides parallel co-financing of 15 million US\$ and the Government of Bangladesh a counterpart contribution of 25 million US\$. Additional co-financing is expected to be leveraged.

## A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	Not applicable
Expected financial close (if applicable)	Not applicable
Estimated implementation start and end date	Start: 01/04/2016 End: 31/03/2022
Project/programme lifespan	6 years

### B.1. Description of Financial Elements of the Project / Programme

All financing will be provided as grant from three different sources: Green Climate Fund (GCF), KfW on behalf of the German Federal Ministry of Economic Cooperation and Development (BMZ) and the Government of Bangladesh (GoB). Components 3 and 4.3 will not receive GCF financing, but will be covered exclusively by KfW/BMZ funds and a respective GoB contribution. Funds provided by KfW/BMZ will be channelled through parallel co-financing under the same Project Management at KfW and LGED. The rationale for Grant financing is provided in Section F.1.

Component	Sub-component (if applicable)	Amount	Currency of disbursement	Amount	Local currency
<b>Component 1</b> Institutional Development	<b>Sub-component 1.1</b> Knowledge management	6.0	<u>million USD (\$)</u>	459.0	million BDT
	<b>Sub-component 1.2</b> Guidelines, standards and procedures	3.0	<u>million USD (\$)</u>	229.5	million BDT
	<b>Sub-component 1.3</b> Communication, consultation and training	3.0	<u>million USD (\$)</u>	229.5	million BDT
	<b>Sub-component 1.4</b> Initiate development of a permanent institutional structure	1.0	<u>million USD (\$)</u>	76.5	million BDT
<b>Component 2</b> Pilot Climate Resilient Rural Infrastructure	<b>Sub-component 2.1</b> Priority Multipurpose Cyclone Shelters	26.5	<u>million USD (\$)</u>	2,027.3	million BDT
	<b>Sub-component 2.2</b> Critical rural road connectivity	10.5	<u>million USD (\$)</u>	803.2	million BDT
<b>Component 3</b> Pilot Climate Resilient Urban Infrastructure	<b>Sub-component 3.1</b> Climate Resilient Urban Infrastructure in Satkhira	18.0	<u>million USD</u>	1,377.0	million BDT
<b>Component 4</b> Project Management	<b>Sub-component 4.1</b> Project Management at LGED	4.5	<u>million USD (\$)</u>	344.3	million BDT
	<b>Sub-component 4.2</b> Institutional Development (ID) support (C1); Design, Management and Supervision (DMS) support (C2)	5.5	<u>million USD (\$)</u>	420.8	million BDT
	<b>Sub-component 4.3</b> Design, Management and Supervision (DMS) support (C3)	2.0	<u>million USD (\$)</u>	153.0	million BDT
<b>Total</b>		80.0	<u>million USD (\$)</u>	6120.0	million BDT

\* 1 US\$ = 76.5 BDT (Bangladeshi Taka, average exchange rate Apr-Jul 2015)

B.2. Project Financing Information							
	Financial Instrument	Amount	Currency	Tenor	Pricing		
(a) Total project financing	(a) = (b) + (c)	80.0	million USD (\$)				
(b) Requested GCF amount	(i) Senior Loans	.....	Options				
	(ii) Subordinated Loans	.....	Options				
	(iii) Equity	.....	Options				
	(iv) Guarantees	.....	Options				
	(v) Reimbursable grants *	.....	Options				
	(vi) Grants *	40.0	million USD (\$)				
* Please provide economic and financial justification in <a href="#">section F.1</a> for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in <a href="#">section E</a> .							
	Total requested (i+ii+iii+iv+v+vi)	40.0	million USD (\$)				
(c) Co-financing	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
	Grant	15.0	million USD (\$)	BMZ/KfW	( ) years	( ) %	Options
	Grant	25.0	million USD (\$)	GoB	( ) years	( ) %	Options
						( ) % IRR	
	Lead financing institution: KfW (as both, GCF and BMZ grants will be channelled through KfW). It is expected that approximately half of the GoB contribution (i.e. 12-13 million USD) will be sufficient to cover all applicable taxes. Please see Annex 7, III for more details.						
* Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.							
B.3. Fee Arrangement (if applicable)							
Left intentionally blank due to general fee and AMA negotiations between KfW and GCF still ongoing. No fees will be included in the 40 million US\$ grant requested from GCF, but will be on top.							
B.4. Financial Market Overview (if applicable)							
Not applicable, as the project is not market based. It covers the installation of administrative and management structures at government level and the construction of non-income generating public infrastructure for vulnerable groups.							



## C.1. Strategic Context

The project comprises the systematic institutionalization of climate change adaptation by a major public infrastructure provider in Bangladesh, the Local Government Engineering Department (LGED). Such a systematic and institutional approach is unprecedented in the country. LGED is an important executing agency of the strategic national climate change adaptation framework (see Section E.5.1) and is one of the few national institutions that due to its experience and setup may qualify for Direct Access to the Green Climate Fund in the coming years. This project will be executed by one of the best suited institutions for piloting this case of institutional change and it will provide positive spill-over effects by bringing a national Bangladeshi institution closer to direct access to the GCF. The project enjoys high-level buy-in from the Government of Bangladesh (GoB), reflected by a significant financial contribution to the project and an explicit long term commitment to institutional change at LGED.

The start of operations of the Green Climate Fund (GCF) has thus triggered an important positive dynamic in Bangladesh and created a unique window of opportunity for paradigm shift on an institutional level (see Section D.1).

## C.2. Project / Programme Objective against Baseline

Bangladesh is considered one of the most vulnerable countries in the world to climate risks (see E.4). According to median predictions of General Circulation Models (GCM), Bangladesh will be 1.5°C warmer and 4 percent wetter by 2050, however with stronger seasonal variations. Natural disasters, like cyclones and floods, cost Bangladesh an average of 1 percent of GDP each year (World Bank 2010). **Public infrastructure coverage** to protect lives and assets from these disasters has significantly expanded since the 1960s, as the Bangladeshi government has invested more than 10 billion US\$ in structural assets (like polders and cyclone shelters) and non-structural assets (like early warning systems). Nevertheless, large areas are still unattended, even in some of the most vulnerable coastal districts and people there remain highly vulnerable to extreme weather events like cyclones. The districts of Bhola, Barguna and Satkhira are the three districts with the highest remaining gap of cyclone shelter coverage (total gap: 157 highest priority cyclone shelters for more than 220,000 people). In the baseline scenario, most of this infrastructure coverage gap is likely to remain, if no action is taken. The World Bank's most recent Multipurpose Disaster Shelter Project (MDSP) was not able to cover the infrastructure gap and it is deemed unlikely that other donors step in on a significant scale. Despite the many innovations in shelter construction developed in development projects over the past years, a series of issues remain. Particularly construction quality and maintenance have proven to be a core challenge. Intensified site supervision during construction is needed, both by LGED and Consultants. Due to the remoteness of the construction sites, also local people have to be empowered to carry out simple supervision tasks for their future school and shelter. Non-engineering social and financial solutions to the maintenance challenge must be explored.

Moreover, **existing infrastructure** in Bangladesh remains vulnerable to the impacts of climate change: Prolonged heat waves and intense precipitation put road pavements under stress and overload urban drainage systems; more severe tidal surges and floods may erode road bases and bridge supports; higher wind speeds of storms and cyclones impact on building structures – just to mention a few of them. Thus, the fulfilment of the infrastructures' social and economic purposes for the most vulnerable people, communities and regions cannot be guaranteed, such as providing effective shelter during extreme weather events or allowing all-year traffic on roads. Many roads, bridges and other physical structures were constructed at times when there was not yet full awareness for the effects of climate change. Even if this infrastructure is repaired, rehabilitated or upgraded today, climate change is usually not taken into account systematically, although there is a rich body of experiences to be learnt from, both in Bangladesh (see C.5) and internationally (like infrastructure codes developed by Engineers Canada or a pilot project for climate change adaptation of the German road infrastructure by the German Federal Roads Agency). In a baseline scenario, standard repairs, rehabilitation and upgrading works in Bangladesh will thus not contribute to preparing existing infrastructure for the additional, incremental challenges of climate change.

On an **institutional level**, the large national agencies responsible for infrastructure planning, construction and maintenance do not follow a systematic approach of climate proofing. Additional, climate change-related risks (e.g. higher flood peak levels, higher peak temperatures) are not systematically taken into account. With more than 1 billion US\$ per year, the Local Government Engineering Department (LGED), the executing agency of this project, is

responsible for more than 10% of all annual public investments in Bangladesh. In a baseline scenario, these infrastructure investments are not systematically made climate proof.

The project outcomes will respond to these three baseline trends. Key outcome of the project will be the systematic integration of climate change adaptation into decision-making regarding infrastructure planning, supervision and maintenance at LGED in Bangladesh (**Outcome 1**), through the establishment of a Climate Resilient Local Infrastructure Centre (CReLIC), a Centre of Excellence and an institutional think tank that is fully integrated into LGED structures and backed-up by pilot investment schemes. Through investment in pilot climate resilient infrastructure, the project will directly enhance adaptive capacities of more than 134,000 people (**Outcome 2**). This will particularly reduce the coverage gap described in the baseline.

The project will have an immediate positive impact on the increased resilience of livelihoods of the most vulnerable people and on the resilience of respective infrastructure to climate threats (**Impact**). The CReLIC will provide the conditions to deliver this increased resilience to climate change on a broad structural scale. At the end of the project, CReLIC will cover 10 percent of the annual LGED investments and, thus, 10.4 million people (see Section E.1). In the long term, climate change adaptation shall be mainstreamed to 100 percent of LGED investments and would then benefit indirectly a total of 104.9 million people.

### C.3. Project / Programme Description

The project will consist of four closely interlinked components (see B.1): (1) Institutional Development, (2) Pilot Climate Resilient Rural Infrastructure, (3) Pilot Climate Resilient Urban Infrastructure and (4) Project Management. The close linkage between institutional development (component 1) and pilot infrastructure (components 2 and 3) in one project ensures that a) mainstreaming is facilitated in a way that is operationally realistic and practicable and that b) a comprehensive institutional and sustainable institutional impact is reached by covering both main operational pillars of LGED: rural and urban infrastructure.

#### Component 1: Institutional Development

This component establishes the Climate Resilient Local Infrastructure Centre (CReLIC), a Centre of Excellence, an institutional think tank and knowledge hub at LGED for adapting local public infrastructure to climate change. The Centre will be dedicated to gathering, analyzing and developing relevant local and national best practices, taking into account international standards, and translating them (among others) into construction standards, standard design, building material standards, training curricula and geo information for infrastructure planning, supervision and maintenance. During the project, the CReLIC will put a special focus on pilot infrastructure financed through components 2 and 3, but its ambition is to become an integral part of LGED operations in all sectors on all levels. Setting up and operating CReLIC will involve almost all LGED units. LGED is committed to setting up CReLIC permanently and the Government has assured that long-term operational costs will be covered by the national budget (see annex, co-financing letter). As the institutionalization of CReLIC is a far-reaching institutional decision, the details of its permanent setup shall only be decided on after the first three years of project implementation, when reliable first lessons learnt are available. The decision shall be backed up by an accompanying institutional assessment and several rounds of internal high-level consultation meetings.

The activities described below will be executed jointly by the Programme Management Office (PMO) and the responsible LGED units. All works will be supported by an Institutional Development Consultant. **A more detailed explanation of each Activity and sub-activity is provided in section F.1.**

#### Sub-component 1.1: Knowledge management

Core output of this sub-component is the continuous internal provision of up-to-date climate relevant data and information through user-friendly ICT-applications and the systematic application of climate impact assessment for LGED standard infrastructure types. Large parts of this sub-component may require outsourcing to national and international research and monitoring institutions. This sub-component brings together meteorological and climate macro-data with engineering know-how, specific institutional experience of LGED and field level data to provide an integrated knowledge base for the development of guidelines, standards and procedures and even specific project

proposals under sub-component 1.2.

**Activity 1.1: Establish comprehensive knowledge management system**

- Sub-Activity 1.1.1: Establish framework for relevant external data acquisition in regular intervals on climate impact variables for LGED infrastructure, in an appropriate digital format with external data providers.
- Sub-Activity 1.1.2: Systematically and continuously capture relevant lessons learnt from LGED's ongoing projects, particularly through regular user/stakeholder surveys of pilot and other infrastructure.
- Sub-Activity 1.1.3: Systematically and continuously screen national and international research projects, publications and best practices for relevant results and feed into internal knowledge management.
- Sub-Activity 1.1.4: Set up adequate formats and applications of provision and exchange of climate-relevant data, information and knowledge inside LGED, such as upgrading and extension of LGED databases, both spatial and non-spatial to provide climate-relevant information in a user-friendly way.
- Sub-Activity 1.1.5: Conduct comprehensive climate impact assessments to identify and verify relevant climate impact variables and risks for all LGED infrastructure types / use of LGED infrastructure and identify mitigation options through LGED planning, designs, regulations and procedures.
- Sub-Activity 1.1.6: Promote action researches in collaboration with national and/or international research institutes where data, information or knowledge gaps are identified.

**Sub-component 1.2: Guidelines, standards and procedures**

This sub-component will develop and upgrade relevant internal LGED guidelines, standards and procedures building on the knowledge base developed under sub-component 1.1 and roll out climate impact assessments in a standardized way to specific project preparations. In a first step, a focus shall be on roads and multipurpose cyclone shelters, as they are among the most important LGED standard infrastructure types (see Table 1).

**Activity 1.2: Develop and adapt guidelines, standards and procedures**

- Sub-Activity 1.2.1: Develop and/or upgrade internal guidelines and procedures for infrastructure planning, site supervision, procurement, maintenance and others, if applicable, to mitigate climate change impacts and risks.
- Sub-Activity 1.2.2: Develop and/or upgrade standard designs and building materials for standard LGED infrastructure to mitigate climate change impacts and risks.
- Sub-Activity 1.2.3: Effectively integrate climate impact assessments in the preparation of Technical Assistance Project Proposals (TPP) and Development Project Proposals (DPP) for preparation of projects funded by the National Budget and/or donors.

**Sub-component 1.3: Communication, consultation and training**

This sub-component ensures that stakeholder consultation becomes a permanent exercise (instead of a one-time exercise) and that lessons learnt from CReLIC are disseminated internally and externally.

**Activity 1.3: Provide communication, consultation and training**

- Sub-Activity 1.3.1: Establish and convene the Consultative Advisory Group (CAG, see C.7) in annual events. This includes the technical and logistical preparation of events, preparation of reports on findings and follow-up on them.
- Sub-Activity 1.3.2: Set incentives for LGED employees to proactively apply CReLIC products and to participate in the internal generation of knowledge and innovation for adaptation to climate change (e.g. through the establishment of LGED Annual Adaptation Award).
- Sub-Activity 1.3.3: Elaborate and disseminate publications of lessons learnt and best practices generated through CReLIC.
- Sub-Activity 1.3.4: Prepare annual training plan and conduct trainings for LGED staff to disseminate CReLIC results internally, develop capacities of CReLIC staff and to provide training on operations and maintenance of pilot infrastructure at community level.

**Sub-component 1.4: Initiate development of permanent institutional structure**

**Activity 1.4:** Initiate development of a permanent institutional structure

- **Sub-Activity 1.4.1:** Provide initial recommendations for permanent institutional setup one year after start of the project, based on a thorough and comprehensive institutional assessment and internal stakeholder survey.
- **Sub-Activity 1.4.2:** Revise recommendations for permanent institutional setup three years after start of the project, based on a comprehensive review of lessons learnt from project implementation.
- **Sub-Activity 1.4.3:** Take necessary high-level GoB approvals on permanent institutional setup three years after start of the project.
- **Sub-Activity 1.4.4:** Provide flexible institutional support in the last year of the project after closing of all other project activities to ensure smooth transition to permanent institutional structure.

**Component 2: Pilot Climate Resilient Rural Infrastructure**

Due to climate change, severe cyclones are expected to occur more frequently in the coastal region, exacerbated by a potential sea level rise of over 27 cm by 2050 (World Bank 2010). Multipurpose Cyclone Shelters and roads that lead to these shelters are safe havens for the vulnerable coastal population in case of disaster. They are proposed as pilot rural infrastructure for mainstreaming through CReLIC. Of all standard LGED infrastructures, these two are also the most important ones in terms of quantity and budget. LGED is responsible for maintaining and upgrading the rural road network (including bridges and culverts) – the lifeline of the rural poor. The construction of cyclone shelters has become an additional major LGED activity in the past years. They can be effective means for saving human lives during cyclones and other extreme weather events, as demonstrated during cyclone Sidr in 2007 (see IPCC 2014).

*Table 1: Important LGED infrastructure types*

No	Infrastructure Types	Quantity (2012-2013)	Expenditure (2012-2013), in US\$
1	Roads (rural and urban)	7,355 km	372.9 million
2	Bridges and Culverts (rural and urban)	27,841 m	128.1 million
3	Cyclone Shelters (rural)	227 No	28.2 million
4	Other buildings (rural and urban)	222 No	13.5 million
5	Water resources development schemes (rural)	95,000 ha	11.9 million
6	Road maintenance (rural)	1,737 km	8.2 million
7	Water & Sanitation schemes (urban)	15,950 No	7.6 million
8	Drainage (urban)	226 km	7.5 million
9	Slum Improvement (urban)	11,024 No	2.7 million

\*1US\$ = 76.5 BDT; Source: LGED Annual Report 2012-2013, non-exhaustive list

The pilot coastal districts where pilot infrastructure will be built are the districts of Bhola, Barguna and Satkhira. Together, the three pilot districts provide an adequate sample for the different topographical and geographical conditions on the Bangladeshi coast. Specific selection of construction sites will be conducted at the start of the project out of the total of 81 eligible locations for new shelters and a total of 29 eligible shelters for rehabilitation (see annex). The 81 eligible sites were identified using the following criteria:

- a) Identified by the Needs Assessment under the Disaster Shelter System Phase I (DSSP-1) in 2011;
- b) Ranked as high priority (based on vulnerability to cyclones and floods, status of existing infrastructure and existing area/population coverage) in the Needs Assessment for the Multipurpose Disaster Shelter Project (MDSP) in 2014;
- c) Located in one of the pilot districts Bhola, Barguna or Satkhira;
- d) Not covered by any other investment project;

Out of this sample, 45 shelters will be selected for new construction and 20 shelters for rehabilitation under the project based on a detailed field survey. Selected roads shall be prioritized based on critical access to shelters they provide

and on additional co-benefits.

Construction of pilot infrastructure shall be realized in two phases (construction cycles) to enable intensified monitoring and field testing of CReLIC in two feedback loops.

***Sub-component 2.1: Priority Multipurpose Cyclone Shelters***

Activity 2.1.1: Build 45 new multipurpose cyclone shelters with close monitoring and knowledge generation through CReLIC.

Activity 2.1.2: Rehabilitate 20 existing multipurpose cyclone shelters with close monitoring and knowledge generation through CReLIC.

***Sub-component 2.2: Critical Rural Road Connectivity***

Activity 2.2: Improve 80 km of critical road connectivity, with priority on providing access roads to the multipurpose cyclone shelters with close monitoring and knowledge generation through CReLIC.

**Component 3: Pilot Climate Resilient Urban Infrastructure**

This Component will be financed by a bilateral parallel co-financing (see B.1) and a respective GoB contribution. As shown in table 1, many LGED infrastructure types are urban. They are developed and implemented jointly between LGED and the city administrations and are thus subject to different internal procedures in LGED than rural infrastructures.

This project component will be essential to allow CReLIC to fulfill its objective for LGED's urban portfolio. The infrastructure components (both, component 2 and 3) are integral parts of the overall project, and are required to achieve the institutional mainstreaming objective of the overall project. Rural and urban infrastructures are the two main pillars of LGED activities. An effective institutional approach requires the inclusion of both pillars to be relevant. Urban infrastructure requires other modes of consultation, cooperation and sharing of tasks and responsibilities with local government bodies than rural infrastructure in component 2. Both components will have a decisive influence on the overall long-term setup of CReLIC and its outputs. On the other hand, the GCF-funded component 1 will be essential for ensuring a comprehensive climate proofing approach to the urban infrastructure implemented in Satkhira under component 3.

All pilot investments under component 3 will be realized in the city of Satkhira. The town was selected as one priority city between the Governments of Germany and Bangladesh in 2014, based on a country wide climate vulnerability assessment for urban centers between 100,000 and 2 million inhabitants. Pilot urban infrastructure in Satkhira is currently being selected and prepared in an inclusive local stakeholder consultation process in line with this funding proposal, based on vulnerability and risk analyses of Satkhira Municipality, in close coordination between LGED and the city administration. Among the eligible infrastructure measures are city drainage, flood protection, water supply, sanitation and transport. Priority will be given to those infrastructures that enhance adaptive capacities of vulnerable people, such as those that live in the slums of the city.

Activity 3.1: Build high-priority urban infrastructure with close monitoring and knowledge generation through CReLIC.

**Component 4: Project Management**

Tasks of the Project Management are described under C.7. In addition to ensuring an effective and efficient implementation of all components the project, the project management is in charge of supporting LGED management in carrying over the project structure into a permanent LGED structure at the end of the project drawing on results from component 1.



#### C.4. Background Information on Project / Programme Sponsor

The accredited entity, **KfW**, is Germany's public Promotional Bank and with a balance sheet of EUR 489 billion and a funding volume of over EUR 74 billion (2014), one of the largest development banks in the world. On behalf of the Federal German Government, particularly the Federal Ministry of Economic Cooperation and Development (BMZ), KfW administers Germany's official Financial Cooperation in more than 100 developing and transition countries in Africa, Asia, South and Central America, the Middle East, South East Europe and the Caucasus. KfW has been engaged in Bangladesh with development projects since 1972, shortly after the independence of the country, and has invested over EUR 3.2 billion in the country, mainly in infrastructure.

The Executing Agency, the **Local Government Engineering Department (LGED)** is the technical arm of the Ministry of Local Government, Rural Development and Cooperatives of the Government of Bangladesh. It is mandated with planning and implementation of local level rural and urban physical infrastructures. As such, it is the major public agency responsible for the provision of local public infrastructure in rural areas and small to medium-sized towns in Bangladesh. The physical infrastructures include roads, bridges/culverts, markets, disaster shelters, solid waste disposal and small scale water resources. For sustainability of these development interventions LGED strives to ensure people's participation, local level planning, social mobilization, poverty alleviation activities and gender interventions. With an annual allocation of more than 1 billion US\$ (FY 2012-2013), LGED is responsible for more than 10 percent of all annual public investments in Bangladesh. Considering only rural development, the LGED ratio is even higher with roughly two thirds of all investments in Bangladesh in rural development. Its largely decentralized manpower of over 10,000 employees ensures effective presence on local level all over the country. LGED has a long standing working relationship with all major donors, including the International Development Association (IDA), Asian Development Bank (ADB), Japan (JICA) and Germany (KfW and GIZ).

**KfW and LGED have been cooperating since 1988, with a total of 12 development projects (bilateral German funding over EUR 122.7 million, all grant)** and maintain a successful and professional relationship of mutual trust. This project proposal represents a new level of inter-institutional cooperation between KfW and LGED.

#### C.5. Market Overview (if applicable)

The proposed Climate Resilient Local Infrastructure Centre (CRoLIC) provides the missing link for effective mainstreaming in the infrastructure portfolio of LGED. It fills the gap between the increasingly diverse and competent landscape of think tanks and scientific institutions that provide policy advice and scientific data in Bangladesh on one side, and project-specific innovations and best practices generated within LGED on the other side.

The **Center for Environmental and Geographic Information Services (CEGIS)** and the **Institute of Water Modelling (IWM)** – both institutions of the Government of Bangladesh – provide scientific data and tools for assessing climate-related risks and impacts. They are involved in a series of other relevant adaptation projects, such as the **Bangladesh Delta Plan (BDP)**, supported by the Government of the Netherlands. The BDP aims at providing an integrated and holistic vision of the Delta Development for the coming decades and represents another significant step forward towards the effective mainstreaming of climate change into national policy planning. Among think tanks, the **Bangladesh Centre for Advanced Studies (BCAS)** or the **Centre for Global Change (CGC)** have a long track record of offering independent climate policy advice. Many Bangladeshi Universities offer relevant expertise that may need to be tapped during the project, such as BRAC University with its **Centre for Climate Change and Environmental Research (C3ER)**, Independent University with its **International Centre for Climate Change and Development (ICCCAD)** and the Bangladesh University of Engineering and Technology (BUET) with its **Institute of Water and Flood Management (IWFM)** and its general expertise on infrastructure designs and materials. All these national players shall be invited to be part of the Consultative Advisory Group (CAG, see C.7) and, if necessary, potentially further inter-institutional cooperation arrangements.

On the project side, some of the most important LGED infrastructure investment projects directed towards adaptation to climate change in the past decade, like the **Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)**, supported by World Bank), the **Coastal Climate Resilient Infrastructure Improvement Project (CCRIP)**, supported by ADB), the **City Regions Development Project (CRDP)**, supported by ADB) or the **Sustainable Rural Infrastructure**

**Improvement Project (SRIIP)**, supported by ADB) were all supported bilaterally by a grant co-financing from the Federal Republic of Germany through KfW. Innovations and best practices from these and other LGED-executed projects will form the starting point of CReLIC operations. For the pilot shelter infrastructure, close coordination with the most recent World Bank-supported Multipurpose Disaster Shelter Project (MDSP) will play a prominent role.

#### C.6. Regulation, Taxation and Insurance (if applicable)

**Approval procedure in Bangladesh:** The Government of the People's Republic of Bangladesh (GoB) has nominated the Local Government Engineering Department (LGED) for executing and implementing the project and has already firmly committed co-financing to this project (see annex, co-financing letter). Upon approval of this funding proposal by the GCF Board, LGED submits a Development Project Proposal (DPP) in the approved format to the responsible Ministry of Local Government, Rural Development and Cooperatives (LGRDC). The DPP contains all relevant terms and conditions of this funding proposal and additional agreements reached and signed with KfW. After due scrutiny and, if necessary, subsequent revisions by the Ministry, the DPP is submitted to the Planning Commission of the Ministry of Planning duly signed by the Secretary of the Local Government Division (LGD) of the Ministry of LGRDC. The Planning Commission will again review and evaluate the proposal. The proposal will then be submitted for approval to the Executive Committee of the National Economic Council (ECNEC), the highest authority headed by the Prime Minister. After approval, the DPP will be notified and processed back to LGED for further necessary action. The modus operandi of the project with administrative and financial requirements is clearly spelled out in the proposal. The project will be executed by LGED following administrative and financial rules and regulations of the GoB and requirements by KfW.

**Approval procedure in KfW:** This funding proposal is equivalent to KfW's internal appraisal report and is already endorsed by KfW management. Relevant terms and conditions of this funding proposal will be translated into contractual terms as described under C.7.

**Taxes, duties and levies:** Contractors shall be responsible for all taxes, duties, fees, and other such levies imposed inside and outside Bangladesh. Based on past experience, respective costs account for up to 19% of investment costs. The GoB cash contribution will be sufficient to cover these costs.

**Insurance:** For civil works (pilot infrastructure), the Contractor shall provide insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles specified in the Particular Conditions of Contract (PCC) for the following events:

- (a) Loss of or damage to the works, plants and materials;
- (b) Loss of or damage to equipment;
- (c) Loss of or damage to property (except the works, plant, materials and equipment) in connection with the contract; and
- (d) Personal injury or death.

All KfW fiduciary, environmental and social standards, as well as KfW procurement guidelines apply to this project. In the 27 years of joint cooperation, LGED has so far proven that it is capable of effectively complying with these standards.

## C.7. Institutional / Implementation Arrangements

### Project Management Office

The project will be implemented by the Local Government Engineering Department (LGED) through a Project Management Office (PMO) at LGED Headquarters in Dhaka, Bangladesh. An experienced and senior Civil Engineer of LGED will be appointed on deputation as the Project Director (PD). Required officers/staff will be deputed internally from LGED and in cases where required staff profiles are not available in LGED and/or where interinstitutional cooperation needs to be enhanced, secondments of external staff shall apply. The role and responsibility of the PMO is, among others:

- Liaise with the responsible line ministry, Local Government Division, and KfW, regarding implementation of the project;
- Prepare and implement interinstitutional agreements, particularly for scientific and academic partnerships, for the setup of the CReLIC;
- Allocate tasks to project officials and staff and supervise their works;
- Review bidding documents to ensure conformity with the National Procurement Guidelines (PPR-2008), KfW and GCF regulations; link interim payments to contractors to milestone achievements in consultation with the project consultants. Review submitted bids (if necessary) and arrange for approval of the component authority for awarding contracts;
- Provide necessary technical guidance to the field level Executive Engineers regarding implementation of the project activities and integration of newly developed CReLIC standards;
- Supervise construction works and advise the Executive Engineer regarding adherence to Technical Specification and quality control;
- Supervise work of the Project Consultants, review man months used against output produced;
- Take necessary measures for Annual Development Plan (ADP) financial allocations to the project;
- Make payments to consultants and contractors as certified by the Project Consultants;
- Maintain financial records of the project and ensure keeping of separate accounts for GCF funds and bilateral German funds, respectively;
- Prepare statement of expenditures as necessary and arrange reimbursement of fund from donors;
- Preserve all expenditure records for audit by KfW and GCF (if fielded).

The decision on how the CReLIC is going to be transferred into a permanent institutional setup shall be taken three years after the beginning of project implementation (see C.3).

### Project Implementation at local level (for pilot infrastructure)

Implementation of pilot infrastructure components at local level will be done by the competent LGED district offices, represented by their respective District Level Executive Engineer who is responsible for all LGED operations in the respective district. The role and responsibility of the District Level Executive Engineer is:

- Implement pilot infrastructure at field level;
- Integrate newly developed CReLIC standards into infrastructure planning and design;
- Call tenders for the project works, evaluate the bids and prepare evaluation reports for review and approval of the component authority and No Objection by KfW;
- Assign works to the officials and staff under his jurisdiction to supervise construction works and assure quality;
- Supervise construction works together with Consultants, provide technical guidance to junior technical staff in connection with the implementation of the project works;
- Prepare physical and financial progress reports and send them to the Project Director for reporting to the government and KfW;
- Certify achievement of milestones progress of different schemes in conformity with the technical specification and assist the Project Director to prepare the reimbursement claims for claiming reimbursement from KfW and GCF;
- Maintain all payment records and face audit;



- Provide support to LGED staff, consultants and/or partners in charge of accompanying pilot infrastructure for feed-back and knowledge management under CReLIC.
- For the urban pilot infrastructure, a Project Implementation Unit (PIU) will be established at Satkhira Pourashava (Municipality). Detailed roles and responsibilities between LGED and the city administration shall be defined in the Project Agreement.

#### **Project Coordination Committee (PCC)**

The Project Coordination Committee (PCC) is under the chairmanship of the Chief Engineer (LGED), and consists of the Additional Chief Engineer, Implementation (LGED), the Deputy Chief of the responsible Line Ministry (LGD), the concerned Superintending Engineers (LGED), representatives from other relevant GoB departments (particularly the Department of Disaster Management - DDM) and the Project Director (as Secretary of the Committee). Representatives from Civil Society Organizations (such as the Red Cross and Red Crescent Society) shall be invited as members of the PCC as well. The PCC will review all relevant implementation issues, provide support and guidance for the smooth implementation of the project and ensure transition to permanent organizational structures of CReLIC. LGED may invite members and observers as necessary. The committee will meet as necessary but at least quarterly (four times a year).

#### **Project Steering Committee (PSC)**

The Project Steering Committee (PSC) is under the chairmanship of the Secretary (LGD), as the responsible line Ministry, and consists of the Additional Chief Engineer, Implementation (LGED), the Deputy Chief (LGD) and the Project Director (as Secretary of the Committee). The core task of the PSC is to provide direct policy guidance to the project through the line ministry in charge. The committee may invite any other official or expert as member if necessary. The committee will meet as necessary but at least twice a year. The role and responsibility of the PSC is:

- Provide policy guidance regarding implementation of the project.
- Review progress and solve problems if there is any during project implementation that needs attention at ministerial level.
- Resolve interagency issues regarding implementation of the project.

#### **Consultative Advisory Group (CAG)**

With the start of the project, LGED will convene a Consultative Advisory Group (CAG) and invite most renowned and reputed national and international experts on Climate Change Adaptation, as well as representatives of Development Partners, relevant Non-Governmental Organizations and institutional project partners to be part of the Group. Its core role is:

- Provide a platform for exchange of best practices, technical and policy innovations and knowledge management;
- Provide overall technical guidance to the project;
- Ensure interlinkage of project developments with international best practice and global policy developments;
- Serve as channel for outreach and communication of project results and impacts.

The group will be convened once a year internationally in a one-day expert forum, if possible, back-to-back with UNFCCC Conference of the Parties (COPs), SBSTA meetings, GCF Board meetings or other important international conferences, where relevant international experts and donor representatives convene. A second annual meeting may be held in Bangladesh, if necessary, to follow up on results from the international meeting.

#### **KfW Project Management**

Project Management and supervision of compliance with KfW Guidelines, rules and procedures will be done by a designated KfW Project Manager at the South Asia Department (LEb4) in KfW Headquarters in Frankfurt (Germany), with support from the KfW Country Office, the unit responsible for supervision of procurement and contracting (LEb5) and the Transaction Department at KfW for supervision and transaction of disbursements (TMa1) and revision of audit reports (TMa4). The Project Manager will be supported by a Senior Civil Engineer, in charge of reviewing any technical

aspects in the course of the project and two Sector Specialists in KfW Dhaka Office who will provide technical advice and support in monitoring the implementation of the project. The Project Manager will liaise internally with the KfW Competence Center for Environment and Climate (LGc3) to ensure intra-institutional learning, knowledge management and coherence. For more details on supervision, see the respective sections F.4 (Financial Management and Procurement) and H.2 (Monitoring, Reporting and Evaluation). All fiduciary standards agreed on between GCF and KfW apply.

#### **Contractual Arrangements**

A Financing Agreement between KfW and the Government of Bangladesh, represented by the Ministry of Finance, Economic Relations Division (ERD) will be signed to regulate core roles and responsibilities of the parties. A second Financing Agreement will be signed between KfW and ERD for the bilateral parallel co-financing. Both agreements will refer to each other to ensure consistency and refer to the same Project Agreement (Separate Agreement) that will be signed between KfW and LGED. The Project Agreement will specify the detailed implementation arrangements regarding the Project Logical Framework of the overall project with outcomes, indicators and activities, project implementation structure, budgets, rights and obligations of KfW and LGED regarding the project cycle, procurement procedures, disbursement procedures and reporting requirements, among others. The same PMO will be used for managing both, GCF funding and the bilateral co-financing.

### C.8. Timetable of Project/Programme Implementation

Please provide a project/programme implementation timetable in [section I \(Annexes\)](#). The table below is for illustrative purposes. If the table format below is used, please refer to the activities as numbered in Section H. In the case of outputs, please mark when all the required activities will be completed.

TASK	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
<b>1. CReLIC established and operational</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.1 Establish knowledge management system	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
1.2 Develop and adapt Guidelines, Standards and Procedures											X	X	X	X	X	X	X	X	X	X				
1.3 Provide Communication, Consultation and Training	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
1.4 Initiate permanent institutional structure	X	X	X									X	X	X							X	X	X	X
<b>2. Pilot rural infrastructure built, rehabilitated or improved</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
2.1.1 Build 45 new cyclone shelters					X	X	X	X	X	X	X	X			X	X	X	X	X	X				
2.1.2 Rehabilitate 20 existing cyclone shelters					X	X	X	X	X	X					X	X	X	X						
2.2 Improve 80 km of critical road connectivity					X	X	X	X	X	X					X	X	X	X						
<b>3. Pilot urban infrastructure built, rehabilitated or improved</b>					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
3.1 Build high priority urban infrastructure					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
<b>4. Project Management</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

\* Independent impact evaluation two to three years after the closing of the project, according to procedure in section H.2.

### D.1. Value Added for GCF Involvement

The GCF provides a stage, where project results become highly visible internationally. This international attention enables high-level commitments by governments that are necessary for the success of far-reaching paradigm shifts. As the GCF is expected to become the new international benchmark in the world of Climate Finance, a GCF-supported mainstreaming project is more likely to exert the necessary convening power than a project only supported by an individual donor or even a multitude of donors. We do expect that the GCF support will enable the leveraging of even more additional cofinancing for the project than currently planned. The chance for national institutions to gain direct access to the GCF will be significantly enhanced if they get the opportunity to prepare themselves by executing GCF funds through the international track and undergoing an institutional reform under the guidance and supervision of the GCF.

As the project components are closely interlinked and interdependent, this project would not take place without involvement of the GCF. The intended structural change would not occur and the significant infrastructure coverage gap in the three coastal districts would remain.

This project is fundamentally different to any investment project implemented so far in Bangladesh, as it subordinates investment measures to institutional development and mainstreaming. The approach and the rationale for selecting measures, locations and sectors is (other than in standard investment projects) institutional, not geographical or sectoral. The approach itself therefore constitutes as well a paradigm shift.

### D.2. Exit Strategy

As the CReLIC is designed to become an integrated part of the LGED organizational structure, the GoB commits to ensuring the long-term financing of the CReLIC by regular budget funds after the end of the project. The Local Government Division (LGD), the line ministry of LGED, has committed firmly to provide the operational funds to run CReLIC after the project ends (see GoB cofinancing commitment letter with the explicit long term commitment). This is an extraordinary demonstration of country ownership and the appropriate exit for KfW/GCF.

Being among the national agencies that receive most external funds in Bangladesh, LGED is increasingly required to integrate climate change in its projects. By opting now for an institutional mainstreaming, LGED prepares itself systematically for becoming a prime recipient of international climate finance in Bangladesh in the future.

Maintenance of pilot infrastructures fall under the different responsibilities of the relevant national or local government agencies. Shelters are usually used as primary schools and thus fall under the responsibility of the Ministry of Primary and Mass Education after hand-over from LGED. Shelters under this project are built with the consent of the Ministry of Primary and Mass Education. The local School Management Committees (SMC), composed by different local stakeholders and headed by the principal of the school, take care of day-to-day management and maintenance. In several cases, cooperation with non-governmental organizations exists on local level. These synergies will be further explored under the project where applicable. Maintenance of roads fall under the maintenance responsibility of LGED and responsible local authorities, like Union Parishads, Upazila Parishads or (in case of an urban context) the Pourashava administration. Regular block allocation provided by the Government to LGED for maintenance of infrastructure will be used for maintaining facilities. Executive Engineers and Upazila Engineers of LGED at District and Upazila level will implement the maintenance activities with their technical staff. No recurring expenditure for manpower and equipment on local level will be required.

Procedural and technical innovations in infrastructure maintenance developed by the CReLIC shall be rolled out successively to all LGED infrastructures.

In this section, the accredited entity is expected to provide a brief description of the expected performance of the proposed project/programme against each of the Fund's six investment criteria. Activity-specific sub-criteria and indicative assessment factors, which can be found in the Fund's [Investment Framework](#), should be addressed where relevant and applicable. This section should tie into any request for concessionality made in [section B.2](#).

### E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

#### E.1.1. Mitigation / adaptation impact potential

The project will have a significant climate change adaptation impact, both directly and locally through the provision of pilot infrastructure and indirectly and structurally through the mainstreaming of climate change adaptation into LGED operations by CReLIC, thus contributing to the Fund level impacts

- Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions (Adaptation 1.0)
- Increased resilience of infrastructure and the built environment to climate change threats (Adaptation 3.0)
- Expected increase in generation and use of climate information in decision-making (Adaptation 5.0)

Through a systematic mainstreaming approach for climate change adaptation into infrastructure planning, implementation and maintenance, the project avoids the lock-in of long-lived climate-vulnerable infrastructure to a significant degree. LGED's main mandate is the provision of long-lived infrastructure in Bangladesh, like roads, drainages or cyclone shelters, which currently is mainly not built to be climate proof. With an annual investment expenditure of more than 1 billion US\$, LGED is responsible for more than 10 percent of all public investments in Bangladesh. The full-scale impact of climate proofing on the LGED portfolio will not be realized immediately after the end of the project, but will evolve gradually with the institutionalization and roll-out of CReLIC services after the end of the project.

#### E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

GCF core indicators	Expected tonnes of carbon dioxide equivalent (t CO <sub>2</sub> eq) to be reduced or avoided (Mitigation only)	Annual	n.a.
		Lifetime	n.a.
	Expected total number of direct and indirect beneficiaries (reduced vulnerability or increased resilience); number of beneficiaries relative to total population (adaptation only)	Total	Direct: 134,350 people Indirect: 10.4 million people
		Percentage (%)	Direct: 0.1 per cent Indirect: 6.8 per cent
Other relevant indicators	Percentage of LGED infrastructure more resilient to climate variability and change: 10% (refers to all annual LGED operations at the end of the project; long-term expectation is full mainstreaming that covers 100 percent of all LGED operations)		

Direct Beneficiaries under component 2 are those that are provided all-year access to shelters, measured by the increased capacity of new cyclone shelters and the reinstated design capacity of rehabilitated shelters. The benefits are based on the following assumption (in line with methodology for the MDSP project, 2014):

- The 45 new shelters will each have the design capacity of 1,430 individuals (Total: 64,350 beneficiaries).
- The 20 existing shelters once rehabilitated will each be reinstated to their design capacity of 1,000 individuals (Total: 20,000 beneficiaries).

A little more than half of the beneficiary population in the districts is female (see Table 2). Direct Beneficiaries under component 3 will be determined by the selection of specific urban infrastructure in Satkhira Municipality in an inclusive stakeholder consultation process, based on vulnerability and risk analyses at the start of the project. It is here assumed that roughly one third of all 153,969 inhabitants of Satkhira Municipality (the urban center of the district) will benefit directly (50,000 people).

*Table 2: Population in pilot district, disaggregated by gender*

District	Male Population	Female population	Total population
Barguna	437,413 (48,9%)	455,368 (51,1%)	892,781 (100%)
Bhola	884,069 (49,7%)	892,726 (50,3%)	1,776,795 (100%)
Satkhira	982,777 (49,4%)	1,003,182 (50,6%)	1,985,959 (100%)
TOTAL (three districts)	2,304,259 (49,4%)	2,351,276 (50,6%)	4,655,535 (100%)

Source: Bangladesh Bureau of Statistics, Census 2011

Indirect Beneficiaries are those that are reached by the systematic institutional climate proofing of all LGED infrastructure through CReLIC. LGED's mandate is local infrastructure in mostly rural and small to mid-size urban areas. The CReLIC is a permanent institutional change, so it is assumed here that all people in LGED-attended areas of the country will be indirect beneficiaries of the project in the mid to long term. The total rural population of Bangladesh is used as a conservative proxy (small and mid-sized urban areas are not included). According to World Development Indicators from 2015, 104.9 million people live in rural Bangladesh. As the impact indicator of the project is to make 10 percent of new and rehabilitated LGED infrastructure more resilient, and it is not yet known where exactly this future infrastructure is going to be located in Bangladesh, we propose to apply the share of CReLIC coverage regarding LGED infrastructure also to the potential overall target population (10 percent of the total rural population in the country). Indicators are compared to the total population of Bangladesh of 156.6 million. The direct beneficiaries of the project account for 2.8 percent of the total population of the pilot districts.

Indicator values for direct beneficiaries are comparable to those in similar projects. However, as CReLIC is a new and innovative approach, there is no comparison for indicator values of indirect beneficiaries.

Expected increase in generation and use of climate information in decision-making is reflected in the indicator "Percentage of LGED infrastructure more resilient to climate variability and change" that accounts for 10% at the end of the project and reflects the share of infrastructure value in the overall LGED portfolio that draws on CReLIC services in planning, supervision and maintenance of infrastructure directly after the end of the project (see also H.1.1). It is expected that this value increases to 100% in the long term.

## **E.2. Paradigm Shift Potential**

Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

### **E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)**

The permanent establishment CReLIC is an institutional paradigm shift for LGED: From ad-hoc project-based approaches towards a systematic integration of climate change adaptation into infrastructure planning, implementation and maintenance. Thus, scaling up will take place inside the institution. A paradigm shift for LGED means automatically a paradigm shift for Bangladesh: LGED is one of the largest government departments with an allocation of more than 10% of the national Annual Development Budget of the Government of Bangladesh and inside this budget, responsible for two thirds of allocations for rural development, in parts of the country where many vulnerable and poor people live. Currently, there are more than 100 development projects in the LGED pipeline, jointly funded by the Government of Bangladesh and different donors. The project thus has an impact on investments worth more than 1 billion US\$ of local infrastructure in Bangladesh per annum by making climate resilience of infrastructure investments a decisive factor of the decision making and planning process. Scaling up and replication beyond LGED is not an objective of this project, but may occur in other national institutions, if the project is successful.

### **E.2.2. Potential for knowledge and learning**

There is already a considerable amount of knowledge on climate resilient infrastructure inside LGED. Many projects supported by donors, like the World Bank, ADB, Germany, the United Kingdom, Denmark, the United States of America or the Netherlands have already generated a considerable amount of learning and will continue to do so. The establishment of CReLIC allows LGED to institutionalize this learning and make it accessible outside the individual limited project boundaries. Even more, it provides a platform for the exchange of knowledge with others outside LGED, like the Red Crescent Society / Red Cross in the case of cyclone shelters. Coupling the CReLIC establishment with on-the-ground investment measures, as proposed by this project, will ensure from the outset that this new knowledge hub is not a theoretical and abstract exercise, but oriented towards operations. High-level public events (such as Consultative Advisory Group meetings) will help to gather and disseminate knowledge broadly and to keep CReLIC high on the political agenda.

### **E.2.3. Contribution to the creation of an enabling environment**

As described under E.2.1, this project is oriented towards creating an enabling environment for individual LGED investments by LGED itself, not for other private or public actors. However, the annual high-level Consultative Advisory Group (CAG) meetings shall be convened and conducted in such a way that they provide effective pathways for knowledge transfer to actors in charge of broader policies in Bangladesh, for example the Planning Commission or the Local Government Department (LGD). They will be part of the annual conventions and thereby guide LGED and CReLIC in the development of their products.

### **E.2.4. Contribution to regulatory framework and policies**

The permanent establishment of CReLIC itself represents a new government policy: The systematic mainstreaming of climate change adaptation into all infrastructure planning, implementation and maintenance under the mandate of LGED, one of the largest government departments (see E.2.1). CReLIC will develop and upgrade relevant LGED guidelines and standards for climate-proof infrastructure.



### E.3. Sustainable Development Potential

#### Wider benefits and priorities

##### E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

Through the establishment of CReLIC, **high-qualified jobs** will be created permanently at LGED. It is currently estimated that 10-20 high qualified permanent jobs are created directly through CReLIC. This number will be verified as soon as the decision over the permanent institutional structure and scope is taken by LGED during project implementation. These jobs are equally open for men and women.

Through the construction of pilot infrastructure, a number of **short-term and seasonal employment opportunities** will be created in the construction industry, probably mostly locally and low-skilled, with important impacts on poverty reduction. Based on KfW and LGED experience from past projects, construction works under the project will create an estimated 930,000 working days of direct employment for road construction (6,200 working days per km) and an estimated 1,170,000 working days of direct employment for shelter construction (26,000 working days per new shelter), totaling 2.1 million working days. This is equivalent for 1,750 full-time unskilled jobs locally for the full duration of the project (6 years, if full-time is considered as 200 days per year).

The construction of roads will provide significant **additional economic benefits** to the rural population in terms of all-year round access and decreased risk of interruption of traffic, reduced travel time and reduced transport costs. The most recent Midterm Survey Report of the Sustainable Rural Infrastructure Improvement Project (SRIP), co-financed by ADB and KfW on behalf of BMZ, shows up to 28 percent average travel time reduction on project roads and up to 21 percent transport cost reduction for goods. This can have important impacts on the local economic development. According to the report, even school attendance could be improved and dropout rates reduced due to improved rural roads.

The Cyclone Shelters built under this project will be used as primary schools in normal times and, thus, have important **educational benefits**. As 45 shelters will be built under the project, the project will provide 45 additional primary schools and improve conditions in 20 more schools. This will help educate an estimated 18,590 children in the three districts, where literacy rates are comparatively low and in Bhola (43.2 percent) and Satkhira (52.1 percent) even below national average (BBS 2011). According to government statistics (Department of Primary Education 2013 and 2014) public primary schools have an average of 286 students. Most teachers in primary schools are female (64%).

All the mentioned job, economic and educational benefits will provide an important contribution to **poverty reduction**, as the infrastructure is intentionally targeted at some of the poorest districts in Bangladesh, and in these districts, to some of the poorest, most vulnerable and most remote areas.

The project will as well have important **gender benefits**: Although reliable data is scarce on gender-specific vulnerabilities to natural disasters in coastal Bangladesh, available studies indicate that women suffer more from natural disasters than men. According to a UNEP survey, in the devastating 1991 cyclone, the death toll among women aged 20-44 was 71 per 1,000, compared to 15 per 1,000 for men. Being usually responsible for the homestead, women tend to wait for their relatives at home to return, before they evacuate to a safe place. Pregnant women and lactating mothers find it often difficult to move, particularly when the cyclone warning reaches them late. They are also often reluctant to leave, in cases where cyclone shelters are not designed gender-friendly (e.g. separate toilets and rooms for women) and they have to share rooms with men they don't know. The project will promote community-based disaster management groups that have an equal number of women representatives and are responsible for the upkeep and maintenance of the Multipurpose Cyclone Shelters. The design of the



Multipurpose Cyclone Shelters will be gender friendly (see F.2) and the project will ensure a significant participation of local women in planning out the design features, location etc in a participatory manner. In the above mentioned employment opportunities, women will be employed with equal pay for equal work. School enrolment rates in primary schools in the coastal region show 51 percent (girls) / 49 percent (boys) gender balance, which means that both sexes benefit on average largely equally from new Multipurpose Cyclone Shelters used as schools.

LGED operations will also have minor **climate change mitigation benefits**, particularly through the stabilization of road sides by the plantation of trees. In Bangladesh, alongside rural roads, trees are planted on average every two meters on both sides of the road, except for those areas where bridges, culverts, houses, existing trees etc. impede the plantation. From past project experience, we estimate that alongside roughly 60 percent of the road length trees will be planted, i.e. on a total length of 48 km. This means the plantation of an estimated total of 48,000 trees during the project. The specific species depend on local conditions and availability.

### E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

#### E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

Bangladesh is considered one of the most vulnerable countries in the world to climate risks (Verisk Maplecroft 2014). Located in one of the world's largest tropical river deltas with largely low-lying topography, the country has always been exposed to natural calamities, like floods, droughts and cyclones. Over the past ten years, natural disasters have caused important economic losses of an estimated annual average of 1 percent of GDP (World Bank 2010) and a significant loss of life. A warmer and wetter climate is expected to exacerbate these adverse impacts. According to median predictions of General Circulation Models (GCM), Bangladesh will be 1.5°C warmer and 4 percent wetter by 2050 (see World Bank 2010), however with stronger seasonal variations. Precipitation is expected to increase by up to 20 percent during the monsoon months July to September that would lead to up to 18 percent higher discharges in the rivers during these months and higher associated flood levels. Severe cyclones are expected to occur more frequently, exacerbated by a potential sea level rise of over 27 cm by 2050 (World Bank 2010). In addition to that, the delta area is subject to land subsidence that aggravates the impacts of sea level rise. The coastal region where the pilot region of this project is located is considered by the far the most vulnerable part of the country to climate change.

#### E.4.2. Financial, economic, social and institutional needs

Bangladesh is part of the group of Least Developed Countries (LDCs), but has experienced impressive development in the past years. Poverty rates have declined from 48.9 percent in 2000 to 31.5 percent in 2010 (using the national poverty line) and from 58.6 percent in 2000 to 43.3 percent in 2013 (using the World Bank 1.25 US\$/day poverty line). Life expectancy has risen from 65 to 71 years. Three out of every four children complete primary school. On 1<sup>st</sup> July 2015, the World Bank announced that Bangladesh would graduate from "lower-income" country to "lower-middle-income" country, as the GNI per capita of an estimated 1,080 US\$ in 2014 for the first time moved above the 1,046 US\$ World Bank threshold of lower-middle-income countries. Although these numbers are still preliminary and they do not change Bangladesh's LDC-status, they show that the country is on a very promising development path.

This promising path is at risk from the impacts of climate change. Investment needs are huge. In 2010, the World Bank estimated additional investment costs for adapting some selected infrastructure to additional risks from climate change to account for more than 4.7 billion US\$ (see Table 3). Real adaptation costs are likely to be considerably higher, as this number does not include the baseline investment needs to adapt to existing risks, is only fixed on few infrastructure types, and takes only into consideration risks caused by tropical cyclones and inland flooding (not counting e.g. sea level rise or drought). These investment needs shown in Table 3 are incremental, so they are not necessarily reflected in existing development planning.

Needs are most dire particularly in the pilot regions of the proposed project. With poverty rates between 32.1 percent

(Satkhira in Khulna Division) and 39.4 percent (Barguna and Bhola in Barisal Division), they are above the national average of 31.5 percent and belong to the disadvantaged parts of the country, only topped by the Northern Division of Rangpur (see Table 4).

*Table 3: Incremental investment costs for selected infrastructure due to climate change in Bangladesh*

Infrastructure	Investment costs	Annual recurrent costs
Roads	2,127 million US\$	42 million US\$
Embankments and Polders	1,410 million US\$	28 million US\$
Cyclone Shelters	1,219 million US\$	24 million US\$

Source: World Bank 2010: Economics of Adaptation to Climate Change - Bangladesh; only tropical cyclones and inland flooding

*Table 4: Distribution of Poverty in Bangladesh by Divisions*

Division	Poverty (percent of population)
Rangpur	42.3
Barisal	39.4
Khulna	32.1
Dhaka	30.5
Rajshahi	29.7
Sylhet	28.1
Chittagong	26.2
<b>NATIONAL</b>	<b>31.5</b>

Source: Sixth Five Year Plan; National Poverty Line

*Table 5: Estimate for needs of new shelters in the 14 coastal districts of Bangladesh*

District	Need for Priority 1 Shelters	Covered by Others	Uncovered
Bagerhat	50	31	19
<b>Barguna</b>	<b>106</b>	<b>45</b>	<b>61</b>
Barisal	112	93	19
<b>Bhola</b>	<b>268</b>	<b>223</b>	<b>45</b>
Chittagong	160	133	27
Cox's Bazar	102	85	17
Feni	30	25	5
Jhalkati	33	27	6
Khulna	47	37	10
Lakshmipur	54	46	8
Noakhali	66	56	10
Patuakhali	160	132	28
Pirojpur	115	95	20
<b>Satkhira</b>	<b>94</b>	<b>43</b>	<b>51</b>
<b>TOTAL</b>	<b>1.397</b>	<b>1.071</b>	<b>326</b>

Source: World Bank, PAD MDSP, Nov. 2014

The three pilot regions Barguna, Bhola and Satkhira were selected, among others, because the need for additional new high priority cyclone shelters is most severe there (see Table 5). This is where the direct impacts of pilot infrastructure will be most prominent. The urban pilot (component 3), Satkhira, was selected in a joint process between Germany and Bangladesh, based on vulnerability criteria, and agreed on in the intergovernmental negotiations between the two countries in 2014. Satkhira is among Bangladesh's most vulnerable urban centers above 100,000 inhabitants.

While LGED has proven to be an experienced and able implementer with high operational capacities, the technical capacities regarding climate change adaptation are limited. There is a considerable need for institutional strengthening if climate change adaptation is to be mainstreamed into infrastructure planning, implementation and maintenance beyond individual projects.

### E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

#### E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

Due to its high natural vulnerabilities to climate related hazards, there is in general a high political awareness in Bangladesh for natural disaster risk management and, in the past decade, climate change adaptation. Bangladesh has become more resilient over the past twenty years by investing heavily in disaster risk reducing infrastructure and early warning systems. Nevertheless, the threat of climate change will challenge the country's preparedness on a new level beyond historically observed trends.

The Government's political vision is specified in its political manifesto "**Vision 2021**" from 2008 that aims to transform Bangladesh from a low income economy to the first stages of a middle-income nation by the year 2021, the 50<sup>th</sup> anniversary of independence of the country. Vision 2021 was later translated into the **Perspective Plan of Bangladesh 2010-2021** that identifies nine strategic priorities, of which priority number seven "mitigating the impacts of climate change" is the fundamental strategic umbrella for national climate policy.

An important policy milestone was the adoption of the **Bangladesh Climate Change Strategy and Action Plan (BCCSAP)** in 2009 to guide nationwide climate change adaptation and to put the nation's improved capacity for disaster risk management on a path towards increased resilience to climate change. It is the main national climate policy document. The BCCSAP sets out 44 programmes under six strategic pillars. This project directly contributes to 13 programmes under four strategic BCCSAP pillars. The BCCSAP builds on the **National Adaptation Programme of Action (NAPA)**, that was prepared by the Government in 2005 as response to a decision by the Seventh Conference of the Parties (COP-7) of the United Nations Framework Convention on Climate Change (UNFCCC).

The Five Year Plans are the core national planning documents that specify actions to be implemented by the different sectoral ministries in a five year timeframe in the form of Annual Development Programmes. The Five Year Plans also determine the allocation of financial resources to nationwide investments across all sectors. The annual budget allocated to LGED for infrastructure is also included in these plans. The upcoming **Seventh Five Year Plan (2016/2017-2020/2021)** is still under preparation, but the existing background studies on Climate Change and Disaster Management confirm the huge unmet demand for climate resilient infrastructure in the country, particularly cyclone shelters and urban drainage. Thus, it can be expected that there will be significant allocations of funds for infrastructure development under LGED mandate that CReLIC will be relevant for.

Apart from the mentioned core strategies and policies, the project will contribute to the priority area "Safety from man-made and natural hazards" of the **Coastal Development Strategy** from 2006 and is covered by the **Standing Orders on Disaster** from 1997 and 2010, that determine the use of geographical information system (GIS)

technology for the planning of cyclone shelters and contain broad guidelines for construction, management, maintenance and use of Cyclone Shelters.

The high contribution of co-financing that the Government of Bangladesh has committed to this project and the commitment to permanent institutional change underline the **extraordinary national ownership** that the country has for this project.

### E.5.2. Capacity of accredited entities and executing entities to deliver

As described under C.4, **KfW** is one of the world's largest development banks specialized, among others, in Climate and Environmental Finance which in 2014 accounted for more than 35% of KfW's overall funding commitments (26.6 billion EUR). In Bangladesh, KfW and LGED have been cooperating since 1988, in 12 development projects (bilateral German funding over EUR 122.7 million, all grant) and maintain a successful and professional relationship of mutual trust. Regarding the implementation of pilot infrastructure, KfW has financed the construction and rehabilitation of around 450 multipurpose cyclone shelters and more than 1,800 km of rural roads in Bangladesh since 1991, the vast majority of them built by LGED. KfW has also supported the construction of Cyclone Shelters in India and has conducted impact evaluations on the Bangladeshi cyclone shelter projects. KfW has a country office in the capital city, Dhaka, with international and local technical staff.

KfW's own "Climate Change Centre" is the so-called "Competence Centre Environment and Climate", established in 2009, a unit of currently 19 specialists in charge of mainstreaming Climate Change into operations of KfW Development Bank. This unit, among others, was responsible for coordinating KfW's accreditation to the GCF and for conducting the GCF readiness programme for developing countries. They have developed internal guidelines and standards for planning, implementation and monitoring of climate change projects that are applied today all over the KfW funding portfolio. Its head of division, Dr. Jochen Harnisch was Coordinating Lead Author of the IPCC Fifth Assessment Report, Working Group III. KfW will be able to provide first-hand experience to LGED on institutional mainstreaming of climate change, as it has gone through the same process over the past six years.

The Executing Agency, the **Local Government Engineering Department (LGED)** has the legal mandate to provide local level rural and urban physical infrastructures and a proven track record to deliver on these investments. As mentioned under C.4, it is the major public agency responsible for the provision of local public infrastructure in rural areas and small to medium-sized towns in Bangladesh. With an annual allocation of more than 1 billion US\$ (FY 2014-2015, see Table 6), LGED is responsible for more than 10% of all public investment expenditures in Bangladesh. Its largely decentralized manpower of over 10,000 employees ensures effective presence on local level all over the country. LGED has a long standing working relationship with all major donors, including the International Development Association (IDA), Asian Development Bank (ADB), Japan (JICA) and Germany (KfW and GIZ).

*Table 6: LGED's annual allocation in the National Development Budget (Annual Development Programme, ADP)*

Financial Year	Total National ADP	LGED's allocation ADP	LGED share of ADP
2011-2012	5.37 billion US\$	568.7 million US\$	10.6 percent
2012-2013	6.85 billion US\$	750.1 million US\$	11.0 percent
2013-2014	7.84 billion US\$	798.3 million US\$	10.2 percent
2014-2015	9.80 billion US\$	1,041.5 million US\$	10.6 percent
Average (2011-2015)			10.6 percent

Source: LGED; Exchange rate: 1 US\$ = 76.5 BDT

It is the nature of innovation and paradigm shift to embark on new uncharted territory. Setting up a Climate Center inside a major public infrastructure provider has never been done before in Bangladesh, so a lot about the proposed project will also be new to both, KfW and LGED. This is the reason why a step-by-step and iterative approach is

proposed for the project and a comprehensive institutional assessment and development process is going to flank the components of the project. This is also the reason why the Consultative Advisory Group (CAG) is proposed and shall perform a decisive, interactive role for the project.

### E.5.3. Engagement with civil society organizations and other relevant stakeholders

The project concept was developed jointly between LGED and KfW, on LGED side with close guidance and supervision of top management. The Project Management of the Multipurpose Disaster Shelter Project (MDSP) was directly involved in the project preparation to maximize synergies and ensure complementarities.

The project concept note was officially discussed at a meeting of the Ministry of Finance, the Planning Commission and the accredited implementing agencies in Bangladesh (ADB, UNDP and KfW), convened by the NDA on 23 April 2015. KfW submitted the project concept note for this proposal to the GCF Secretariat on 17 May 2015. The GCF Secretariat sent its review to KfW on 22 June 2015. Recommendations were discussed between KfW and GCF Secretariat on the same day in a teleconference. KfW made all efforts to take GCF Secretariat comments up into the present funding proposal accordingly. An additional teleconference on the project concept and GCF recommendations took place on 1 July 2015 between KfW, LGED, NDA and GCF Secretariat.

For the inclusion of bilateral parallel co-financing from Germany under the umbrella of the CReLIC concept, several rounds of discussions were held with the German Federal Ministry for Economic Cooperation and Development (BMZ) between 11 June 2015 and 28 July 2015. These discussions will continue, as the GCF-funded part and the bilaterally co-financed part will be set up under one project.

NDA convened a stakeholder meeting on the proposal with relevant Sector Ministries (Ministry of Finance, Ministry of Planning, Ministry of Environment and Forests and Ministry of Local Government, Rural Development and Cooperatives) and their respective departments on 14 July 2015, where KfW and LGED presented the proposal and gathered feedback. A large consultation meeting was held on 29 July 2015 with a broad range of stakeholders invited from local authorities (from the three pilot districts Bhola, Barguna and Satkhira), civil society, academia and the donor community.

During all this time from the outset in March 2015 until the submission of the funding proposal several informal, bilateral talks have been conducted by KfW and LGED with different stakeholders, particularly donors active in Bangladesh (such as DfID and DANIDA), civil society (e.g. the Red Cross / Red Crescent Society in Bangladesh) and renowned climate change experts from Bangladesh, some of which are affiliated to institutes mentioned under C.5 and have participated as authors in past IPCC Assessment Reports. The project proposal itself was born out of these informal bilateral discussions, and KfW and LGED would like to thank the involved experts deeply for their ideas and contributions.

As consultation, communication and outreach is an integral part of this project proposal, the described consultations are only the beginning of a continuous stakeholder consultation process that will culminate each year in the annual meetings of the Consultative Advisory Group (CAG). With the permanent establishment of the CAG, the project directly contributes to strengthening the institutional consultation process on climate change issues in Bangladesh.

## E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

### E.6.1. Cost-effectiveness and efficiency

As also mentioned under F.1, the **economic cost-benefit relationship** of this project cannot be quantified without facing the ethical dilemma of monetarizing the value of human life. This is why – in line with KfW rules and procedures and international best practice – a quantified cost-benefit analysis was considered not applicable for this project, as it would lead a) to an arbitrary and b) ethical problematic recommendation for the investment decision to the GCF Board (as the investment decision would be based on the “price tag” attached to a human life).

Our assessment why we consider this project still economically viable concerning its GCF-financed infrastructure components is based on the strong scientific evidence (see IPCC 2014: Climate Change 2014: Impacts, Adaptation and Vulnerability. Summaries, Frequently Asked Questions, and Cross-Chapter Boxes. A contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, p.150) and the excellent track record in independent evaluations (see Annex 2/09 and a most recent evaluation on multipurpose cyclone shelters in India (not yet published)) concerning the extraordinary relevance and impact of multipurpose cyclone shelters in effectively saving human lives. For poor people living in the highly vulnerable rural coastal areas of Bangladesh, particularly on islands like the pilot district Bhola, there is simply no cost-effective alternative for protecting their lives in case of disaster. As described under E.3.1, the pilot infrastructures also render considerable co-benefits. They strengthen the decision for investment, once it is taken.

The institutional development part of the project is considered viable in the long run, as the Government of Bangladesh (GoB) has already formally committed to operate the permanent structure of CReLIC within LGED in the long-run (see co-financing letter). The Government of Bangladesh has committed to contribute an extraordinary 31.3 percent of the overall budget to this project, which is also a sign of the necessary political backing for institutional sustainability.

**Grant financing** is the economically and financially appropriate way of financing this project. This is an innovative pilot endeavor in a Least Developed Country (LDC) targeting some of the most vulnerable regions and populations in the whole country. The focus of the project is the development of institutional capacities with no immediate economic return. Pilot infrastructure components will include a higher level of additional monitoring and supervision through consultants and CReLIC for knowledge generation than standard infrastructure. Shelters and roads are built primarily for humanitarian purposes (saving human lives). Although the pilot infrastructures render considerable co-benefits (see E.3.1), their economic profitability cannot be assessed without facing the ethical dilemma of monetarizing the value of human life (see above). Projects of this type are traditionally financed through grants by KfW on behalf of the German Federal Government in bilateral development cooperation. KfW's own co-financing of USD 15 million from BMZ is also provided as a grant to the Government of Bangladesh for this reason.

An assessment of the project through the application of the incremental cost approach is methodologically not appropriate. The definition of incremental costs as used by the GEF (see Global Environment Facility Evaluation Office (2007): Evaluation of Incremental Cost Assessment; UNFCCC (2006): UNFCCC Handbook) builds on the differentiation between local benefits of a project and global environmental benefits. This logic is by nature not applicable to adaptation activities. Since CRIM aims at mainstreaming climate change adaptation into decision-making regarding infrastructure planning, supervision and maintenance in Bangladesh, the project (with all its components) is by definition addressing only adaptation to climate change. The pilot investment components 2 and 3 are an integral part of the ultimate climate change adaptation mainstreaming under the project.

The **cost estimates** of this project may appear to be high for this project at first glance, particularly compared to standard investment projects generally funded by multilateral and bilateral development banks (including KfW) – to which the proposed project is not comparable for its fundamentally different setup. However, higher costs are the necessary price for an intended a) higher quality of the infrastructure, b) better sustainability, c) additional benefits



regarding innovation and institutional leverage and d) targeting of some of the most vulnerable populations and regions of the country, with difficult access and therefore higher construction costs. A detailed justification of cost estimates is included in section F.1. In any case, KfW procurement guidelines apply. This ensures that all contracts under all CRIM components are awarded in competitive bidding procedures covered by the guidelines at market prices, independently of the cost estimates provided in this funding proposal. This ensures maximum cost efficiency.

As all activities under the project are within a public mandate, there will be no crowding out of private investment. Although there is a lot of public investment by other donors and by the Government of Bangladesh (GoB) provided to climate resilient infrastructure, the needs of the country are so large, that a crowding out of public investment is not expected.

### E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

The co-financing ratio of this project is 1:1, all grants. For each Dollar provided by the GCF, one additional Dollar will be provided by the Government of the People's Republic of Bangladesh (GoB) or the Government of the Federal Republic of Germany. The GoB co-financing will be provided directly through LGED, both in kind and in cash, the German bilateral co-financing will be provided in cash through KfW to LGED as parallel co-financing.

Although it is not an explicit objective of the proposed project, it is expected that additional co-financing can be leveraged for CReLIC to expand its scope, for example pilot infrastructure in water resources development schemes.

### E.6.3. Financial viability

The main benefit of cyclone shelters and the roads that provide access to them is **saving human lives**. Economic Analyses for the construction of cyclone shelters have been conducted in the past, but they always face a fundamental ethical dilemma: The valuation of human lives. A typical proxy that is often used in similar economic analyses is the Value of Statistical Life (VoSL). Economic analyses for cyclone shelters conducted with this proxy show internal rates of return (IRR) between 13 percent and 75 percent. We would not expect a fundamentally different IRR for the proposed project, if an economic analysis was made with the same assumptions and using the same variables. However, the ethical dilemma remains. After carefully pondering pros and cons, we decided to refrain from conducting a specific economic analysis for the cyclone shelter infrastructure due to this ethical dilemma.

The institutional development part of the project is considered viable in the long run, as the Government of Bangladesh (GoB) will provide the funds necessary for operating the permanent structure of CReLIC within LGED.

### E.6.4. Application of best practices

During project preparation, no benchmark or best practice could be identified for introducing a climate change unit into a major infrastructure provider. If similar cases are identified during project implementation in other countries, for example through platforms like the Consultative Advisory Group (CAG), the project will exchange lessons learnt with them and, if appropriate, establish interinstitutional partnerships of learning and exchange. It is expected that the CReLIC itself will become a best practice and an international reference. Due to the innovative character of this project, a step-by-step and iterative approach is proposed for the project and a comprehensive institutional assessment and development process is going to flank the components of the project.

As it is part of the objective of component 1, CReLIC itself will identify and systematically apply best practices related to climate change adaptation in the LGED investment portfolio. Regarding pilot infrastructure, the most important innovations regarding cyclone shelters were triggered in the past years by the Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP), particularly regarding gender-friendly shelter designs (with separate wash-rooms and sometimes even separate floors for men and women), the inclusion of shelter for livestock and facilities like

water supply and storage systems. Pilot infrastructure under the project will build on these.

Quality control remains a challenge particularly in remote areas. The new Multipurpose Disaster Shelter Project (MDSP) has proposed technological innovations like steel frames for a couple of pilot buildings to reduce the need of close supervision. If positive lessons learnt from MDSP are already available at the beginning of the project they shall be taken into account. In addition to that, the project assigns increased funds for construction supervision to ensure appropriate quality control. Local communities and stakeholders may be involved in simple supervision tasks.

During stakeholder consultations for this project it became clear that innovation is needed particularly in social and institutional terms, for example at the link with early warning systems and regarding maintenance. The early warning systems depend critically on community volunteers and their continued commitment. The project will provide measures to increase social recognition of these volunteers and their capacity. The lack of maintenance has complex social, institutional and financial dimensions, and is often site-specific. The project will conduct a more comprehensive assessment in this area, including an assessment regarding the introduction of long-term financing mechanisms, like endowment or sinking funds for the pilot structures, although experiences with specific financial measures like community funds are so far mixed. Parts of CReLIC's innovation development and local soft measures for component 2 will be focused on the issue of maintenance.

## E.6.5. Key efficiency and effectiveness indicators

GCF core indicators	Estimated cost per t CO <sub>2</sub> eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)
	Not applicable, as only mitigation
	Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)
	Not applicable, as only mitigation
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)	
<p>Number of temporary and permanent jobs created by the project</p> <p>Reduction of travel time and transport costs on project-financed roads</p> <p>Number of children enrolled in project-financed primary schools (multipurpose cyclone shelters)</p>	



## F.1. Economic and Financial Analysis

### Economic and Financial Analysis:

As mentioned under E.6.1, the economic profitability of this project cannot be quantified without facing the ethical dilemma of monetarizing the value of human life. This is why – in line with KfW rules and procedures and international best practice – a quantified cost-benefit analysis was considered not applicable for this project, as it would lead a) to an arbitrary and b) ethical problematic recommendation for the investment decision to the GCF Board (as the investment decision would be based on the “price tag” attached to a human life).

Our assessment why we consider this project still economically viable concerning its GCF-financed infrastructure components is based on the strong scientific evidence (see IPCC 2014: Climate Change 2014: Impacts, Adaptation and Vulnerability. Summaries, Frequently Asked Questions, and Cross-Chapter Boxes. A contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, p.150) and the excellent track record in independent evaluations (see Annex 2/09 and a most recent evaluation on multipurpose cyclone shelters in India (not yet published)) concerning the extraordinary relevance and impact of multipurpose cyclone shelters in effectively saving human lives. For poor people living in the highly vulnerable rural coastal areas of Bangladesh, particularly on islands like the pilot district Bhola, there is simply no cost-effective alternative for protecting their lives in case of disaster. As described under E.3.1, the pilot infrastructures also render considerable co-benefits. They strengthen the decision for investment, once it is taken.

The institutional development part of the project is considered viable in the long run, as the Government of Bangladesh (GoB) has already formally committed to operating the permanent structure of CReLIC within LGED in the long-run (see co-financing letter). A further indicator of the economic and financial viability is the extraordinary commitment of the Government of Bangladesh to contribute 31.3 percent of the overall budget to this project.

### Background on cost estimates

As described under E.6.1, the cost estimates of this project may appear to be high for this project at first glance, particularly compared to standard investment projects generally funded by multilateral and bilateral development banks (including KfW). However, higher costs are the necessary price for an intended a) higher quality of the infrastructure, b) better sustainability, c) additional benefits regarding innovation and institutional leverage and d) targeting of some of the most vulnerable populations and regions of the country, with difficult access and therefore higher construction costs.

In any case, KfW procurement guidelines apply. This ensures that all contracts under all CRIM components are awarded in competitive bidding procedures covered by the guidelines at market prices, independently of the cost estimates provided in this funding proposal. This ensures maximum cost efficiency.

### Costs of Component 1:

A large part of the higher costs is due to the **iterative institutional learning approach** during the whole lifetime of the project opposed to a one-off short-term consultancy approach that is usually conducted as TA component of large standard infrastructure projects. TA inputs are needed for a longer timeframe to build the intended institutional sustainability.

Cost estimates for component 1 carry a certain degree of uncertainty and may therefore appear to be high, particularly for sub-component 1.1 (“Establish knowledge management system”). This is due to two reasons:

- Cost uncertainties are attributable to the **innovative nature** of the project.

- Cost comparisons to other projects are only of limited value, as there is **no real benchmark**.

There is very limited experience both nationally and internationally, concerning the cost of an institutional mainstreaming approach to infrastructure in an iterative process involving the direct piloting of innovations in a broad and varied infrastructure portfolio on the ground. This project type is the first of its kind in Bangladesh. It is the nature of real innovations that there are no real benchmarks. Due to these uncertainties, the project provides in component 1.4 as the first deliverable of the component a comprehensive institutional assessment (budgeted with 300,000 US\$), among others, to sharpen the current indicative cost estimates (see Annex 7/I, Indicative Detailed Cost Estimate and see Annex 6, Timetable). We expect that after this assessment was conducted, a more specific and reliable cost estimate is generated.

The comparatively high expected GoB share of this component (37.5 percent of the component's budget) is intended to buffer these uncertainties financially for GCF funds (see Annex 7/III).

*Costs of Sub-component 1.1 “Establish knowledge management system”*

Sub-component 1.1.1 “Establish framework for external data acquisition” includes specialized organizational and IT consulting services, assessing the existing LGED non-IT and IT systems for planning, implementation and monitoring, exploring potential for interlinkages and gaps, and proposing options for optimizing the existing institutional and organizational setup. As this involves institutional high-level decisions within LGED and external public and private data providers, this cannot be done sustainably only by a short term consultancy. We expect that at least one long-term organizational development consultant with strong GIS knowledge will be needed to support the first years of implementation and the negotiation of framework agreements with external partners, in addition to two national long-term consultants and specialized short term inputs by IT consultants. We do expect that for some data (e.g. high resolution satellite images, water models), LGED will have to pay for, and these costs need to be covered by the project in the beginning. The overall estimate for this sub-component is 990,000 US\$ (please see Annex 7, I for details).

Sub component 1.1.2 “Continuously capture lessons learnt” will consist primarily of an initial detailed baseline assessment of existing relevant lessons learnt regarding the use of existing LGED infrastructure and the realization of at least 30 long-term local-level user/stakeholder surveys of users of pilot infrastructures in component 2 and 3 over three to four years, during their construction period and their first years of operations during the project period that will document also gender-related issues (e.g. such as women’s experience in disaster response and preparedness). This sub-component is expected to consist largely of long-term national consultancy services plus several workshops and outreach on local level. The overall estimate is 440,000 US\$ for this sub-component.

Sub component 1.1.3 “Continuously screen external research and best practice” is oriented towards systematically capturing lessons learnt from other countries and from scientific innovations in engineering and planning. A mid- to long-term Consultant with strong linkage to international research is necessary for the baseline input, but also for helping LGED to establish an institutional practice of tapping this source of innovation by themselves. It will involve a large amount of continued international network building (e.g. through participation in 1-2 conventions per year or external staff secondments, e.g. in the context of action researches proposed for sub-component 1.1.6) and direct access to relevant scientific journals. The overall estimate is 330,000 US\$ for this sub-component.

Sub-component 1.1.4 “Set up applications for knowledge provision” is the genuine “IT sub-component” of component 1, as it covers the upgrade of existing IT systems and structures based on the recommendations of sub-component 1.1.1. It is expected that this is done by a specialized IT-firm and will include both necessary and additional software, hardware, upgrades and first years of maintenance and trouble-shooting. It has to be guided and supervised by a long-term international IT consultant. As the scope of this sub-component is going to depend decisively on sub-component 1.1.1, it is difficult to provide a reliable cost estimate. Based on a rough initial assessment during project preparation, we expect 1,210,000 US\$ to be sufficient for this sub-component.

Sub-component 1.1.5 “Conduct comprehensive climate impact assessments” will pull together information inputs from all previous sub-components to conduct detailed assessments for at least 5 of the most relevant LGED infrastructure types (such as cyclone shelters and urban infrastructure, that are at the same time also among the most complex ones) and an estimated 15 additional ones for smaller infrastructure types. The cost of conducting these assessments (almost entirely Consulting Costs) on the different infrastructure types is difficult to estimate, as they depend on the complexity of the infrastructure itself and the range of regional circumstances under which these assessments need to be field-tested (e.g. cyclone shelters only apply to a similar topographic and climatic zone (the Coast) while roads cover the whole country). As a rough reference, the ADB Climate Change Fund budgeted an average cost of 250,000 US\$ to 400,000 US\$ per Climate Risk and Vulnerability Assessment. We estimate a unit cost of 200,000 US\$ for the five in-depth assessments (as a lot of information will already be provided by the previous sub-components and the assessments are embedded in a broader learning framework) and an aggregate 500,000 US\$ for the remaining 15 infrastructure types that shall be conducted in less detail. The overall cost of this compo

Sub-component 1.1.6 “Promote action researches for knowledge gaps” will target relevant knowledge gaps identified in the first four sub-components. It is hard to predict to what degree this will be necessary. We estimate an average of three research projects in the context of partnership agreements with national or international research institutes over three and a half years (see Annex 6, Timetable) with an individual annual budget of roughly 100,000 US\$ (see Annex 7/I) that also includes the publication of results in national and/or international scientific journals.

#### *Costs of Sub-component 1.2 “Develop and adapt guidelines, standards and procedures”*

The development and adaptation of guidelines, standards (e.g. standard designs and standard materials) and procedures that translate the knowledge generated in Sub-component 1.1 into institutional practice will include predominantly international long-term consulting services (at least two international full-time consultants for an estimated two and a half years (see Annex 6, Timetable) each, one senior organization development expert and one senior engineer) and long-term national consulting services (at least three national consultants with knowledge of Bangladeshi public regulatory systems and respective organizational development and engineering skills). The material / design part will require several short-term inputs from architects, specialized engineers, urban planners and land use planners.

An additional budget is provided to “field-test” and effectively mainstream the guidelines/standard application in a total of 30 new and specific LGED investment and/or TA projects funded by other donors and/or the national budget, under preparation in the last years of the project. An estimated 30 “climate proof” Development Project Proposals (DPP) and Technical Project Proposals (TPP) will be provided. The DPPs/TPPs are the national equivalent to international appraisal reports/funding proposals, that national Bangladeshi executing agencies have to submit to the Ministry of Planning to receive budgets (see also C.6 that describes the approval procedure for this project itself).

The total budget of this sub-component is an estimated 3,000,000 US\$ (see Annex 7,I for details).

#### *Cost of Sub-component 1.3 “Provide communication and training”*

Most of the sub-component budget will be allocated to conduct internal trainings to LGED operational staff in the pilot districts and at Headquarter level to disseminate CReLIC results and build capacities for use and application of the innovations. A detailed training plan will be developed at the end of the first year of the project (see Annex 6) and will be continuously adapted and updated throughout the project as CReLIC delivers results. The training plan shall include trainings specifically for LGED staff of the CReLIC project to build up their capacities as they will need to take over some activities from seconded staff and consultants after the project ends. As operations and maintenance has already been defined as one of the core bottleneck of pilot infrastructures during the project preparation phase, an

important part of the trainings shall target the stakeholders on local level in charge of maintaining pilot infrastructure constructed under components 2 and 3. The training plan shall include gender capacity building interventions. We have budgeted a rough annual budget of almost 400,000 US\$ for trainings that results in a total of an estimated 1,590,000 US\$ for trainings in total.

The Consultative Advisory Group (see C.7) is expected to be convened once a year (altogether six times) in a high-level annual conference setting. Most of the associated costs are for professional event management at an international standard and associated travel costs and logistics. The overall budget for the CAG is an estimated 760,000 US\$.

For communication and outreach a budget of 435,000 US\$ is reserved for publication and dissemination of lessons learnt and best practices of CReLIC, mainly through digital means and a professional website in english and bangla language that is professionally positioned in search engines like Google, so that CReLIC can be found and tapped on the web by potentially interested professionals worldwide, linked to the official LGED website.

In this sub-component, additional internal incentives in LGED shall be piloted to enhance intrinsic motivation by staff to participate in the development of innovations under CReLIC and to apply its products. One option is the establishment of an annual LGED Adaptation Award. It is difficult to estimate costs for this sub-component, but 215,000 US\$ are expected to be sufficient to cover event management costs, convening of an independent jury and prize of such an award over the life of the project, and potentially beyond.

#### *Cost of Sub-component 1.4 “Initiate development of permanent institutional structure”*

This component consist of the above mentioned initial comprehensive institutional assessment, its review after three years of project implementation and a one-year flexible contingency budget to smoothen the transition from the CReLIC project to the permanent institutional structure. It is particularly hard to tell at this stage which core bottlenecks will need this additional support after five years of project implementation, but we expect that most of the budget will be needed for additional consultancy support during phase-out. An estimated total of 1 million US\$ is budgeted for this component (see Annex 7/I for details).

#### **Costs of Component 2:**

The **budget for component 2**, the rural pilot infrastructure is determined by the selection of three coastal districts to allow for sufficient geographical representativeness of pilot locations. While all three districts were qualified as highest priority districts (see F.2), Bhola is composed of a series of islands with difficult access, Barguna is to a large extent marshland on the mainland and Satkhira is a part of the delta region that is protected to a certain extent by the mangrove forests of the Sundarbans. Together, the three districts provide an adequate sample for the different topographical and geographical conditions on the Bangladeshi coast. At the same time, they are sufficiently close to each other to enable cost-efficient monitoring. Satkhira was also picked to study the rural-urban linkages between component 2 and component 3 of the project. The quantity of pilot infrastructure under component 2 has to be sufficient to allow for two phases of construction within the same project cycle. This is due to the stepwise approach of CReLIC establishment of component 1 and to ensure that an additional set of lessons learnt can be included in the second construction cycle. Considering all these determinants, the total of 65 shelters (45 new shelters and 20 for rehabilitation) was considered adequate for this purpose. Based on past project experience, an average of 2.3 km of access road was estimated for each shelter (both new and rehabilitation).

The estimate for the construction of a new multipurpose cyclone shelter is set at an average 500,000 US\$. The cost of an individual unit depends on a series of different factors. Table 7 shows the unit costs of shelters tendered under

KfW financing in the past three years. Variation is considerable. Costs are usually determined decisively by local competition during tender, number of shelters tendered in one package (usually the bigger the package, the cheaper individual unit costs, however, with a couple of exceptions) and the site-specific costs (e.g. due to additional transport costs and lack of availability of skilled local labour). All the higher cost-packages in Table 7 include also additional costs for small “last mile” access tracks that are often needed on the compounds themselves to connect the shelters to the remaining road system, that are not included in estimates of other shelter projects.

*Table 7: Individual shelter costs of tendered cyclone shelters under KfW financing in the past three years (only Patuakhali and Barguna districts)*

Package ID	Average unit costs (US\$)
1	467,446.37
2	599,078.92
3	548,830.08
4	379,896.29
5	655,377.96
6	503,770.69
7	578,811.22
8	661,069.07
9	457,338.46
10	386,977.04
11	266,459.21
12	365,437.57
13	392,772.07
14	406,160.37
<b>Average</b>	<b>422,771.11</b>

Source: KfW (please note that the average cost is different to the sum of all average unit costs divided by 14, as several units were tendered jointly in packages)

We think, it is justified to maintain the “last mile” access track as part of individual shelter packages, as they are often decisive for effective use and can most efficiently be dealt with by the contractor in charge of the main construction site. It is difficult to predict the individual necessary lengths of these tracks. This data will be available in the detailed design phase.

Additional costs (that are included in the estimates) are expected due to the choice of the pilot districts (see F.1).

CRIM sites are on average expected to be more remote and difficult to construct with the same quality standards and to supervise than the average shelters constructed by other projects that cover the full length of the Bangladeshi coastline. The difficult but highly vulnerable Bhola district is basically composed by islands. As one of the three CRIM pilot districts, Bhola is expected to account for 34-45 percent of new shelters under CRIM. Bhola is arguably one of the most difficult districts to work, but needs are most dire there and high impacts can be expected. This, however, has an impact on average cost estimates.

We also expect that innovations generated by CReLIC in design and material for the second batch tenders will impact on temporarily higher individual costs per unit for the second batch. As social outreach is often reported as key weakness of shelter construction, we have provided a separate small budget for strengthening stakeholder committees on site (please see Annex 7, for more details).

Altogether we expect that the average comparably high unit cost estimate of 500,000 US\$ is technically and financially justified on these grounds. We are convinced that this will be more than offset by high quality, sustainability and impact of the infrastructure.

For shelter rehabilitation, it is extremely difficult to provide a reliable cost estimate prediction before detailed design. The variation is from a few hundred US\$ (e.g. for painting and minor repairs) to more than 200,000 US\$ per unit (e.g. for vertical extension of an existing shelter and upgrading to a gender-friendly facility). Average costs in other shelter projects have been set at an estimated 80,000 US\$. The same additional geographic challenges, additional “last mile” costs and uncertainties about cost implications of CReLIC innovations mentioned above for new shelters also apply to rehabilitation of shelters. As most eligible shelters under CReLIC are reportedly in a bad or very bad shape and were specifically picked for these reasons, we expect that an average 120,000 US\$ per unit will be sufficient to reflect necessary average per unit costs and are justified economically and financially.

The road sub-component builds on the LGED standard rate of 130,000 US\$ per kilometer of road. This standard rate is used in other infrastructure projects as well and is considered reasonable enough to cover specific CReLIC innovations expected for the second batch of infrastructure tenders.

Contingencies for this component (5 percent for the rather complex shelters and 1 percent for the less complex roads) are reasonable and common practice. They should be sufficient to cover price escalations or additional other types of unexpected cost increases.

### **Costs of Component 3:**

The overall budget assigned for urban infrastructure in Satkhira is in line with budgets assigned to individual municipalities under other donor-funded LGED projects. Scoping visits to the municipality of Satkhira in 2014 and 2015 have shown that the need for high priority climate resilient urban infrastructure is by far larger than available funds. As most of the LGED urban infrastructure is to a certain degree scalable (see section C.3, Table 1), there is no doubt that the assigned budget can be spent effectively and efficiently on high priority climate resilient urban infrastructure out of the LGED portfolio. The funds are covered by a commitment of the Federal Republic of Germany to the People's Republic of Bangladesh.

The detailed infrastructure package is currently being prepared with Satkhira City Administration and LGED in line with this funding proposal to the GCF and will be specified in the respective Separate Agreement / Project Agreement with LGED/Satkhira City Administration. Final cost of measures under Component 3 will also be determined through public procurement processes, ensuring best value for funds invested.



#### Costs of Component 4:

Direct Project Management Costs for CRIM are summarized under sub-component 4.1 and account for 4.5 million US\$ (roughly 5.6 percent of overall costs) and are expected to be fully borne by the Government of Bangladesh (GoB).

The overall Project Management Costs for CRIM include Consulting Services for Design, Management and Supervision (DMS) and Institutional Support (ID). These consulting services account for 9.3 percent of the total budget. These cost positions are sometimes covered under infrastructure components in standard infrastructure projects, like some World Bank projects. With institutional support (ID) these consulting services also include additional institutional strengthening and institutional capacity building measures for managing the complex component 1.

With an overall 15 percent of the overall budget, Project Management costs are at the higher end of project management costs of standard infrastructure projects, but not exceptional. The higher overall management costs are due to the following reasons:

- CRIM will provide an increased budget for supervision of infrastructure components that raises consulting costs. This is in part necessary due to the remoteness of most construction sites. The additional budget is, however, also provided to improve quality control and, thus, sustainability. Quality control is considered one of the core bottlenecks in shelter construction;
- CRIM is considerably more complex than standard “plain vanilla” infrastructure projects and therefore not fully comparable to them. In standard infrastructure projects, there is no equivalent to component 1 (mainstreaming). We expect a lot of institutional and inter-institutional consensus-building, event management, supervision and coordination of the many necessary TA inputs under component 1, a more complex accounting and procurement (due to many non-standardized contracts) and the necessity for a flexible and proactive project management.

The mentioned PMU costs cannot be reduced by sharing the PMU with another project. We would even expect that PMU costs rise in case of sharing the PMU with another project that has different objectives and fundamentally different PMU tasks (as all other standard investment projects that are currently under implementation by LGED have). The overall contribution of the GoB to component 4 is expected to account for 53.1 percent (see Annex 7, III).

#### Overall assessment:

Altogether, the financial structure can be considered adequate and reasonable to achieve the desired impact.

## F.2. Technical Evaluation

It is part of the objective of CReLIC to assess technological solutions, including designs and building materials of all LGED standard infrastructures.

LGED has established itself as the largest and most capable agency for the construction and rehabilitation of cyclone shelters and all kinds of rural roads in Bangladesh. For the pilot infrastructure, LGED standard designs and specifications shall be used, adapted to specific local circumstances and updated by innovations developed by CReLIC. If deemed appropriate in the course of the detailed climate impact assessments under this projects, green infrastructure design standards that promote low-emission development, shall be considered. Expert consultations and product development for pilot infrastructure shall be prioritized by the CReLIC component 1. Pilot infrastructure

shall receive a significantly more intensive monitoring by consultants, CReLIC and potential scientific partners than normal infrastructure, to gather lessons learnt, cross-check findings from expert consultations and feed it back into the institutional development process.

Road infrastructure is particularly affected by tidal surges in the region. Current embankment heights need to take into account future climate scenarios. Evidence from ongoing projects suggests that an average of 80 cm above Highest Flood Level (HFL) is sufficient (will be assessed during detailed design). Slope protection and stabilization of road shoulders is particularly important to maintain the integrity of the embankment during floods. Roller-compacted concrete pavement (RCC pavement) is considered the most resilient pavement for smaller local roads, particularly for the most vulnerable sections of the road.

As the ground in the coastal region is often marshy, with a very low load-bearing capacity, a proper geotechnical assessment will be conducted to ensure construction of sufficiently strong foundations. Due to the remoteness of the project area, it is difficult to provide construction materials (for example, freshwater for concrete works or aggregates for concrete and pavement works). The central and regional LGED material testing laboratories will play an important role to assist verification of materials and construction quality on site. The shelter shall be constructed gender-adequate, for example with separate toilets for men and women (in larger shelters even separate floors) and separate rooms for pregnant women. The shelters shall be provided with solar power to provide minimum power supply in case of disaster and facilities for rainwater harvesting (emergency water supply).

The pilot coastal districts where pilot infrastructure will be built are the districts of Bhola, Barguna and Satkhira. Together, the three pilot districts provide an adequate sample for the different topographical and geographical conditions on the Bangladeshi coast. Specific selection of construction sites will be conducted at the start of the project out of the total of 81 eligible locations for new shelters and a total of 29 eligible shelters for rehabilitation (see annex). The 81 eligible sites were identified using the following criteria:

- a) Identified by the Needs Assessment under the Disaster Shelter System Phase I (DSSP-1) in 2011;
- b) Ranked as high priority (based on vulnerability to cyclones and floods, status of existing infrastructure and existing area/population coverage) in the Needs Assessment for the Multipurpose Disaster Shelter Project (MDSP) in 2014;
- c) Located in one of the pilot districts Bhola, Barguna or Satkhira;
- d) Not covered by any other investment project;

Out of this sample, 45 shelters will be selected for new construction and 20 shelters for rehabilitation under the project based on a detailed field survey. Selected roads shall be prioritized based on critical access to shelters they provide and on additional co-benefits. For each road and shelter package, LGED will prepare a sub-project appraisal report to be submitted and approved by KfW. The format will be specified in the Project Agreement.

Specific project urban infrastructure in Satkhira Municipality will be identified in an inclusive stakeholder consultation process, based on vulnerability and risk analyses at the start of the project.

### F.3. Environmental, Social Assessment, including Gender Considerations

#### 1. Environmental and Social Risk Category (A/B/C)

For most project components (see C.3) no significant or irreversible environmental or significant negative social impacts are expected. However, the construction of new Multipurpose Cyclone Shelters and access roads may lead to land acquisition and in some cases to limited displacement. The construction of new cyclone shelters and access roads will also require a local environmental and social impact assessment, which will also be aligned with international standards, to identify and avoid adverse impacts. The project was screened and designated as environmental Category B which is appropriate and consistent with the previous experience in similar projects and provisions of the sustainability guideline of KfW Development Bank and international practice for the following reasons:

- no important protected habitats will be impacted, no violation of international treaties and no consumption of



- high resources are expected;
- generally no land acquisition and resettlement are necessary as the proposed sites will be within existing educational facilities; and
- all project related environmental and social impacts during construction and implementation of the sub-project can usually be mitigated through state-of-the-art countermeasures or standard solutions and the potential consequences will be limited to the local area and are in most cases reversible.

## 2. Applicable Performance Standards (PS) for the Project.

Performance Standards of IFC		Justification of PS Applicability
<b>PS 1:</b> Assessment and Management of Environmental and Social Risks and Impacts	X	Environmental & social (E&S) impacts to be assessed for every sub-project.
<b>PS 2:</b> Labor and Working Conditions	X	Safe and appropriate working conditions to be assured during construction and maintenance
<b>PS 3:</b> Resource Efficiency and Pollution Prevention	X	Resource efficiency and adequate standards for pollution prevention to be ensured for each sub-project
<b>PS 4:</b> Community Health, Safety, and Security	X	During construction community H&S may be an issue, in particular onsite the education facilities.
<b>PS 5:</b> Land Acquisition and Involuntary Resettlement	(X)	For most sub-projects not applicable as the proposed implementation will be in the existing educational facility boundaries. However there will be a resettlement framework in case land acquisition/ resettlement cannot be avoided.
<b>PS 6:</b> Biodiversity Conservation and Sustainable Management of Living Natural Resources	n/a	No protected or rich biodiversity area will be disturbed or located within the Area of Influence of the Sub-project. This will be excluded.
<b>PS 7:</b> Indigenous Peoples	n/a	No indigenous peoples are living in the area of influence
<b>PS 8:</b> Cultural Heritage	(x)	Depends on location. Chance Finds Procedure to be applied.

It should be noted that two sample sites were picked for an exemplary Environmental and Social Impact Assessment as the site selection process is currently ongoing for the sub-component 2.1. (see C.3). For the two selected sites only PS1–4 are applicable, because no land acquisition or resettlement is required as the shelters will be located within the existing education facility boundaries and no cultural assets were identified.

## 3. Summary of the environment and social impact assessment (ESIA)

An assessment was made for two schools as sample to understand the overall baseline condition and possible environmental and social impacts of the proposed activities. As the other locations will be determined throughout project implementation the project has - as lessons learnt from previous shelter programs in cooperation with the World Bank – set up an Environment Management Framework (EMF), a Social Management Framework (SMF) and a Land Acquisition and Resettlement Policy Framework to guide all upcoming construction activities for the

planned 45 new shelters and 20 shelter rehabilitations as well as road rehabilitation to ensure the compliance with KfW's sustainability guideline and therewith with IFC Performance Standards to assess the environmental and social risks and impacts of each sub-project in a consistent manner. For an early identification of E&S risks an Environmental Screening Format has been established, which has to be filled out for every proposed site.

### **PS 1 – Assessment and Management of Environmental and Social Risks and Impacts**

Based on baseline studies, lessons learnt from previous similar projects and community and stakeholder consultations general environmental and social impacts were assessed and mitigation measures designed. These are compiled in management plans that will become part of the implementation contract. In addition sub-project specific measure will be added as appropriate. This allows knowledge sharing between the different sub-projects because all will be assessed based on the same Environmental and Social framework.

#### Generally expected Environmental risks/impacts and respective mitigation measures:

In the following typical impacts and risks are summarized with potential mitigation measures. The impact and risks are mostly on-site and construction related. The mitigation measures include dust and noise control, tree plantation, waste disposal, health and safety, water supply, and sanitation etc. In summary:

- Surface and ground water pollution may contaminate surface water and ground water table. Mitigation measure include safe disposal away from the site.
- Air/Dust pollution may pose health hazard to school children, residents and pedestrians. Sprinkling water on dusty roads and covering stockpiles is necessary.
- Soil erosion may cause land slide/ battered slope, rain-cut, absence of vegetation. This can be addressed by layer to layer compaction, soil stabilization measures, re-vegetation and restoration of disturbed soil and appropriate design of slopes to prevent slumping, slippage and erosion.
- Destruction of trees and vegetation may enhance deforestation and desertification. Possible responses can be tree plantations in proper places of school (cyclone shelter) premises and re-vegetation of barren surfaces.
- Inadequate drinking water supply and lack of sanitation will increase incidence of diseases. Adequate supply of drinking water needs to be ensured and sanitation facilities for male and female workers need to be kept separately.

These specific risks and mitigation measures shall be addressed under an environmental management system based on the Environmental Management Plan (EMP) which will specify the probable risks and mitigation measures under the government and KfW's Sustainability Guideline.

#### Generally expected Social risks/impacts:

The construction of cyclone shelters may create some unavoidable adverse social impacts to affected households physically or economically, if there is need for land acquisition and relocation of people. In case land acquisition is necessary, this will be assessed and addressed according to Bangladeshi legal provisions and IFC Performance Standards where differences are identified. But in any case, first priority will be given to construction sites with no need for land acquisition (see PS 5 below).

Further community safety may be an issue during construction in particular on site of the education facilities. There it will be relevant to coordinate construction time outside of schooling hours (see also PS 4 below).

Lack of health and safety measures may cause health hazards and general safety of workers. Adequate safety gears for workers shall be provided and training for contractors and workers arranged (see PS 2 below).

LGED will set up a Grievance Redress Mechanism to allow the public and affected people to voice concerns regarding the subprojects or any project related activities. The mechanism will be communicated through the consultation and trainings of the program.

During the sub-project implementation comprehensive consultation processes are foreseen. This includes participation during screening and assessment to inform the ESIA, information disclosure, focus group discussion, etc. and ongoing participation.

Monitoring will be ensured through the EMP. Responsible will be the Project Management Office (PMO) that will prepare quarterly progress reports and submit them to KfW. The reports include the following (i) project progress regarding physical works and capacity building, (ii) delays and problems encountered and actions to be taken to resolve them, (iii) compliance with grant covenants, (iv) expected progress during the next 6 months, and (v) general information on sector development and policy change.

The PMO of LGED will be supported by an external consultant to ensure adequate capacity to address environmental and social issues.

### **PS 2 – Labor and working conditions**

LGED will ensure that adequate labor and working conditions are provided to all workers. These will be described in an Occupational Health and Safety Plan (OHS Plan). The OHS Plan shall ensure:

- Implementation of this Occupational Health and Safety Plan.
- Provision of first aid facilities and regular check of worker health and vaccination
- Training provisions for workers and supervisors on first aid, health and safety measure procedures.
- Maintaining proper medical aids and medicines establishing temporary stock during construction.
- Training of construction workers in general health and safety matters and on specific hazards of their work especially fire safety, traffic safety, personal protective equipment, emergency preparedness and response;
- Provision for workers with appropriate personal protection equipment (PPE), such as safety boots, helmets, gloves, protective clothing, goggles and ear protection.
- Provision of safe drinking water to all workers, as confirmed by independent water quality testing and submission of lab results to the engineer; and
- Traffic safety instruction for workers and contractors to inform their drivers of the location of noise and safety sensitive area. In these areas, speed limits will be restricted and use of vehicle horns and engine breaking will not be permitted at all times, unless in emergency situations.

Further LGED will be responsible to enforce the implementation for the ILO core convention (in particular on child and forced labor). LGED and the contracted engineer will ensure that any person wishing to file a complaint or table a concern can reach them without fear of retribution.

LGED will instruct the contacted engineer to undertake a random check of the H&S documents on a monthly basis, document this and take immediate on-the-spot action if non-compliance is identified.

To convey these OHS requirements to the contractor, Special Environmental Clauses (SECs) for the Tender Documents are provided in the environmental and social documentation of the sub-project that will be incorporated in the contracts.

### **PS 3 – Resource Efficiency and Pollution Prevention**

Resource efficiency due to resource constraints is central in the sub-projects. Therefore, solar panel will be installed on the shelter roof tops to generate clean energy for the users. One of the most important needs during and after cyclones is the availability of drinking water. This is of at most importance as surface water is often saline and in a few cases with traces of arsenic in hand pumps. To deter this, tube-wells on raised platform pumping safe water will be installed in the shelters. There will be provisions of rain water harvesting facilities in the shelters.

In summary the project will support:

- renewable energy (solar lighting) for lighting purposes,
- rainwater harvesting storage tanks for water supply purpose,
- drinking water and sanitation facilities in the shelters,
- maintenance of the planned tree plantation through the school management and the community
- floors to be furnished with situ mosaic to reduce damage and for easy maintenance;
- aluminum sliding windows were provided as per U.S. Architectural Aluminum Manufacturer's Association

- standard specification
- ramp for disabled

The environmental aspects of design criteria will also include maintaining the aesthetic view of the premises, save the agriculture land, play grounds, avoid felling of any tree or minimum number of trees, maintaining proper design with landscape etc.

#### **PS 4 – Community Health, Safety and Security**

The main risk for the community will occur during construction. And the safety issues due to construction were also raised during public consultation events. The concerns were safety of school kids on site. Therefore, class activities and safety to students of the multipurpose shelters during construction work will be ensured adopting the following options:

- Duration of construction work will be extended to avoiding construction work during class hours.
- Construction works will be extended during nights and holidays.
- When construction can't be avoided during class hours in one floor, this floor will not be used for class activities during construction.

These points will be included in each Environmental Management Plan.

Throughout the consultation and information process with the communities, construction activities will be communicated to raise awareness within the community.

As outlined above clean water provision will be ensured during emergency situations in the shelters. Further, gender related consideration for women include a separate pregnancy room and separate hygiene facilities.

#### **PS 5 – Land Acquisition and Involuntary Resettlement**

Generally it must be highlighted that resettlement and land acquisition will totally be avoided if possible. Lands in the premises of the educational institutions are mostly owned by the government and where unavailable, (i) other public lands will be used as much as feasible; only in critical cases (without alternative) (ii) private lands can be obtained for sites through (iia) voluntary donation, (iib) direct purchase (willing seller and buyer basis), (iiic) exchange or contribution against compensation by sponsoring institutions. With this approach, involuntary resettlement for implementation of the sub-projects is highly unlikely. However, since disaster shelters are basic infrastructure in the disaster prone coastal areas, unavailability of land in the selected sponsoring educational and social institutions or through voluntary donation should not be an excuse to drop a vulnerable area without a shelter. A feasible option in compliance with World Bank OP 4.12 respectively IFC PS5, will be resorted to as last option.

In case where land acquisition or land take is not avoidable the project specific Land Acquisition and Resettlement Policy Framework will apply. This foresees in the first place the above mentioned hierarchy to avoid any land acquisition or resettlement. If not avoidable the resettlement policy guidelines apply to bridge gap between national provisions and the international standards: (i) eligibility for compensation will be determined this includes also people without legal land title, (ii) compensation is calculated based on market price, (iv) this will include also the loss of income (economic displacement) to ensure livelihood restoration; (iii) if required relocation assistance will be provided; (v) if required assistance will be provided to complete land title documentation; (vi) Monitoring will be performed.

Provisions for a sub-project would be compiled in a sub-project specific resettlement action plan that will be sent to the Bank for approval.

#### **4. Consideration of gender aspect in the Project**

The overall objective of the of gender consideration in the proposed of the Climate Resilient Shelter and Public Infrastructure Project is to ensure that by adopting a gender-sensitive approach, the project will efficiently contribute to gender equality and will achieve greater and more sustainable climate change results, outcomes and impacts.

The gender consideration in this project has set out six fundamental principles:

- (1) Commitment to gender equality and equity;
- (2) Inclusiveness in terms of access and applicability to all the activities;
- (3) Accountability for gender and climate change results and impacts;
- (4) National policies and priorities, and inclusive stakeholder participation;
- (5) Competencies throughout the institutional framework; and
- (6) Equitable resource allocation so that women and men benefit equitably from the adaptation measures.

During the implementation of the proposed project, LGED will oversee its contractor whether or not the proposed gender considerations have been fulfilled throughout preparation, implementation, and operation of the project periods. The proposed environmental and social management plans clearly mentioned the actions to satisfy the requisite.

#### F.4. Financial Management and Procurement

This section reflects KfW standard procedure. The procedure may be subject to revisions to reflect the outcome of the ongoing negotiations of the Accreditation Master agreement (AMA) and Funded Activity Agreement (FAA) between KfW and GCF.

##### Procurement

Procurement will be done according to KfW procurement guidelines (Guidelines for the Assignment of Consultants and Guidelines for Procurement of Goods, Works and associated Services), approved by GCF through the accreditation process.

LGED and KfW Standard GoB procurement procedures shall be applied wherever they are in accordance with KfW guidelines to avoid duplication and ensure efficiency. International Competitive Bidding (ICB) shall be applied for large contracts. For smaller contracts, national competitive bidding (NCB) will be allowed. Specific thresholds will be in line with thresholds commonly used in projects between KfW and LGED and will be defined in the Separate Agreement. The new ICT-based e-GP system (e-Government Procurement system) shall be used, if compatible with KfW guidelines (assessment is currently ongoing). LGED has a proven track record of effectively conducting procurement under KfW procurement guidelines. Details will be regulated in the Financial and Separate Agreement, and will include rights and obligations regarding the supervision of the procurement process (e.g. requirement of KfW No Objection to Terms of Reference (particularly for Consulting Services), works packages, tender documents, tender evaluation reports and contracts) in line with GCF-accredited KfW standard procedure, and a preliminary procurement timetable.

##### Financial Management and disbursement methods

LGED has well documented financial regulations and procedures and internal control measures in financial management and procurement and has the experience of implementing a number of KfW-, World Bank-, ADB- and other donor financed projects. LGED will recruit a Senior Financial Management Specialist for the project, who will ensure efficient financial performance. The LGED has Unified Financial Management Software (UFMS) for accounting financial transactions in the PMO and is currently in the process of applying it in the district offices. All funds will be legally handled by LGED, and disbursed according to the disbursement methods described below.

Disbursement methods will follow standard disbursement methods in other projects of KfW and LGED. GCF funds will be disbursed through a Special Account ("KfW Dispositionsfonds"-method) to be established by the PMO of the project at a

commercial bank with sufficient experience in handling these types of accounts. The approved Government procedures governing the establishment of Special Accounts shall be followed. PMO will manage the Special Account. A Statement of Expenditure (SoE) has to be presented to KfW before replenishment of the Special Account, usually every four months, together with a disbursement forecast for the next four months. All statements and forecasts have to be countersigned by the Design, Management and Supervision Consultant, according to KfW rules and procedures.

Direct disbursement method (direct payment to contractors' accounts by KfW on request by PMO) shall be allowed for large contracts and international consulting contracts, particularly for those in foreign currency, to avoid exchange loss. Details will be regulated in the Separate Agreement, to be signed between KfW and LGED.

### **Financial Audits**

External audits will be done by the national Foreign Aided Project Audit Directorate (FAPAD) under the Office of the Comptroller and Auditor General of Bangladesh (CAGBD) following International Standards on Auditing (ISA) and practices of the International Organization of Supreme Audit Institutions (INTOSAI)/SAI of Bangladesh and also procedures prescribed by the GoB and the respective Development Partner (in this case KfW) following their specific Terms of Reference. Periodicity of the standard financial audits is one per year. KfW reserves its right to conduct and/or request additional audits. Details will be regulated in the Financial and Separate Agreement. As a German Bank, KfW is subject to German Anti-Money Laundering and Counter-Terrorism Financing laws and policies.



## G.1. Risk Assessment Summary

The **overall implementation risk** of the project is rated as medium with medium possibilities to influence the determinants of specific risks (see G.2).

There is a general political risk (**stakeholder risk**) that the extraordinary support that the Government of Bangladesh (GoB) provides to the project and the local support by local stakeholders to pilot infrastructure decreases. There is a **governance risk**, particularly related to contract management and procurement particularly for infrastructure investments. A **capacity risk** exists, particularly regarding the steering of the institutional development process. Although both LGED and KfW have a long experience in dealing with pilot infrastructure, there is always the risk that an **unforeseen social and environmental risk** occurs as soon as the project moves into the phase of specific site selections and detailed design. Due to the remoteness of some construction sites there is also a **monitoring risk** of construction quality. And, as usually in the case of infrastructure finance, there is the **sustainability risk** that maintenance of pilot infrastructure is not going to be adequately done, although responsibilities are theoretically well defined, as well as a **risk of delay and cost override**.

The project proposes a series of mitigation measures. These will be able to mitigate risks to a certain degree, but will not be able to eliminate them completely.

## G.2. Risk Factors and Mitigation Measures

*Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.*

### Selected Risk Factor 1 Stakeholder Risk

Description	Risk category	Level of risk	Probability of risk occurring
Project stakeholders, both on national and on local level are expected to be supportive of proposed project measures, but the risk of reduced political and social support cannot be fully discarded.	Other	High (>20% of project value)	Low

#### Mitigation Measure(s)

KfW and LGED will maintain a continued dialogue with all relevant stakeholders, including Government agencies, donors, relevant Non-Governmental Organizations and local communities, both through the established project-specific forums (see C.7) and through the regular interinstitutional dialogue.

### Selected Risk Factor 2 Governance Risk

Description	Risk category	Level of risk	Probability of risk occurring
Governance risks exist for the project, in contract management and procurement.	Other	Low (<5% of project value)	High

#### Mitigation Measure(s)

KfW procurement guidelines are specifically designed for procurement in countries and/or projects with respective governance risks and already reflect special procurement oversight measures. Construction quality will be supervised and monitored by an independent supervision consultant. Proactive monitoring by KfW staff, both in Dhaka and Frankfurt, and frequent field visits, usually accompanied by an experienced KfW Senior Civil Engineer,

will contribute to supervision quality. To the extent possible, contract shall be packaged in larger lots to attract more bidders. International Competitive Bidding (ICB) shall be the rule, with National Competitive Bidding (NCB) being allowed under commonly applicable thresholds. Procedural innovations regarding governance improvements that are currently under development in LGED (such as the World-Bank supported e-procurement) shall be applied for the project with priority, provided that they are in compliance with KfW rules and procedures.

**Selected Risk Factor 3 Capacity Risk**

Description	Risk category	Level of risk	Probability of risk occurring
While LGED has a comparatively high capacity in managing infrastructure projects they are less experienced in conducting an institutional development project. Technical capacities for supervision, procurement, financial management are generally good at LGED. There are deficiencies in Climate Change Adaptation.	Technical and operational	Medium (5.1-20% of project value)	Medium

**Mitigation Measure(s)**

Project Management will be conducted by a specific Project Management Unit that will receive technical assistance and adequate budget to implement the project. The PMO will provide senior staff for financial management. Where LGED does not have the necessary expertise, staff shall be recruited or be made temporarily available through staff secondment from other public agencies.

**Selected Risk Factor 4 Unforeseen Social and Environmental Risk**

Description	Risk category	Level of risk	Probability of risk occurring
During construction of pilot infrastructure, unforeseen social and environmental risks may be discovered.	Social and environmental	Low (<5% of project value)	Medium

**Mitigation Measure(s)**

Site-specific social and environmental risks will be assessed during the phase of specific site selection and preparation of detailed design. Land acquisition is not anticipated under the project. Risks shall be managed according to F.3.

**Selected Risk Factor 5 Monitoring Risk**

Description	Risk category	Level of risk	Probability of risk occurring
The selected pilot regions are very remote and difficult to access. This can cause difficulties in monitoring construction quality.	Technical and operational	Low (<5% of project value)	High

**Mitigation Measure(s)**

The project will provide sufficient consultant capacity to supervise construction in addition to LGED staff. The linkage with CReLIC will guarantee that frequent visits of external observers occur on construction sites. As supervision is part of the CReLIC scope of work, any innovation in supervision of works developed by CReLIC shall be applied in the project.

<b>Selected Risk Factor 6 Sustainability Risk</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Adequate maintenance of infrastructure may not be provided after the end of the project.	Technical and operational	Low (<5% of project value)	High
Mitigation Measure(s)			
Responsibilities for infrastructure maintenance are clear (see D.2) and will be monitored during the project (as completion of some pilot infrastructure is expected to be long before the end of the project). Shelters are used as primary schools, which considerably mitigates the sustainability risk, but – as past project experience shows – cannot fully avoid it. The shelters are built with the consent of the Ministry of Primary and Mass Education, and a respective covenant shall be included in the Project Agreement between KfW and LGED. One focus of CReLIC is the development of innovations for improving maintenance that shall be rolled out to LGED operations.			
<b>Selected Risk Factor 7 Risk of delay and cost override</b>			
Description	Risk category	Level of risk	Probability of risk occurring
As in all development projects, there is a risk of delay, particularly due to delays in procurement, and cost overrides due to exchange rate fluctuations or price increases	Financial	Low (<5% of project value)	Medium
Mitigation Measure(s)			
Sufficient contingencies have been included in budget estimates, based on past experience. Both, KfW and LGED will provide a close financial monitoring and ensure quick reaction times in project management to avoid delays. As stipulated in all Financial Agreements of KfW with the People's Republic of Bangladesh, the Government of Bangladesh ensures the overall financing of the project.			
<b>Selected Risk Factor 8 Knowledge Risk</b>			
Description	Risk category	Level of risk	Probability of risk occurring
There is a risk of information gaps regarding expected future climate change impacts.	Other	Low (<5% of project value)	Low
Mitigation Measure(s)			
The setting up of CReLIC will empower LGED to react flexibly to new scientific findings on climate change. The close collaboration with scientific partners under CReLIC will ensure that LGED builds its mainstreaming on the best available scientific data. Pilot infrastructures can be qualified largely as low regret measures regarding climate change adaptation, and we do not expect the lock-in of inappropriate infrastructure.			

## H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's [Performance Measurement Framework](#) under the [Results Management Framework](#).

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level <sup>1</sup>						
Paradigm shift objectives						
<i>Increased climate-resilient sustainable development</i>	Climate-related risks to sustainable development in Bangladesh are significantly reduced, as critical public infrastructure and its users become less exposed to climate hazards, are less susceptible to climate change-related impacts and are more resilient in the face of disaster.					
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Fund-level impacts						
<i>A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions</i>	1.1 Change in expected losses of lives and economic assets (US\$) due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention. <sup>2</sup>	Capacity of built and rehabilitated Shelters with effective access for population  Statistical Data  Designs, Field Survey and Monitoring Reports	Zero reduction per future super cyclone in area without access to shelter	Reduction of expected casualties by 40,000 per future super cyclone, disaggregated by gender	Reduction of expected casualties by 84,350 per future super cyclone, disaggregated by gender	Infrastructure is accepted and used by target group in case of disaster to full capacity  Early warning systems work  People that use shelter in case of disaster have no alternative shelter to go to
<i>A3.0 Increased resilience of infrastructure and the built environment to climate change</i>	3.1 Number and value of physical assets made more resilient to climate variability and change, considering human benefits (reported where applicable) <sup>3</sup>	LGED internal surveys	0% of all new and rehabilitated LGED infrastructure per year (both number and value)	5% of all new and rehabilitated LGED infrastructure per year (both number and value)	10% of all new and rehabilitated LGED infrastructure per year (both number and value)	Climate change impacts develop according to forecasts  GoB remains committed to mainstreaming of climate change adaptation  Construction and maintenance is done appropriately

<sup>1</sup> Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement):

[http://www.gcfund.org/fileadmin/00\\_customer/documents/Operations/5.3\\_Initial\\_PMF.pdf](http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf)

<sup>2</sup> Pilot infrastructure of this project is built to save human lives, not to protect economic assets, therefore only the „humanitarian half“ of impact indicator 1.1 will be covered by a target.

<sup>3</sup> Indicator 3.1 refers to the mainstreaming impact of the project on the overall LGED portfolio. Although targets are set in percentages (as the specific future LGED infrastructure portfolio is not yet known), reporting will be on numbers and values, according to the GCF PMF. Physical assets made more resilient under the pilot components are already covered as outputs under 2.1, 2.2 and 2.3, and are not mentioned again at impact level.

### H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project/programme outcomes	Outcomes that contribute to Fund-level impacts					
A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation 5.2 An annual budget is provided by LGED after the end of the project to operate CReLIC	Qualitative assessment  Organigram of LGED  Annual budget of LGED (in Annual Report)	No  No	No  No	Yes  Yes	CReLIC products and services are used at different levels in LGED
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.1 Use by vulnerable households, communities, businesses and public-sector services of Fund-supported tools, instruments, strategies and activities to respond to climate change and variability	Monitoring reports and field surveys  Monitoring reports and field surveys	0 people with all year round access to transport and shelter  0 people with access to climate resilient urban infrastructure	40,000 people with all year round access to transport and shelter  0 people with access to climate resilient urban infrastructure	84,350 people with all year round access to transport and shelter  50,000 people with access to climate resilient urban infrastructure	Infrastructure is accepted and used by target group in case of disaster to full capacity  Early warning systems work
Project/programme outputs	Outputs that contribute to outcomes					
1. CReLIC established and operational	1.1 A comprehensive Knowledge Management System is established and field-tested	Monitoring reports	No	No	Yes	
	1.2 Guidelines, standards and procedures are developed, adapted and field-tested	Monitoring reports	No	No	Yes	
	1.3 Necessary communication, consultation and training is provided	Monitoring reports	No	No	Yes	

2. Pilot rural infrastructure built, rehabilitated or improved	2.1 At least 45 new cyclone shelters are built	Monitoring reports	0	0	45	
	2.2 At least 20 existing cyclone shelters are rehabilitated	Monitoring reports	0	0	20	
	2.3 80 km of critical road connectivity is improved	Monitoring reports	0 km	0 km	80 km	
3. Pilot urban infrastructure built, rehabilitated or improved	Indicator will be specified at beginning of project, bilateral co-financing	To be specified, bilateral co-financing	To be specified, bilateral co-financing	To be specified, bilateral co-financing	To be specified, bilateral co-financing	
<b>Activities<sup>4</sup></b>	<b>Description</b>	<b>Inputs</b>		<b>Description</b>		
1.1 Establish knowledge management system	1.1.1 Establish framework for relevant external data acquisition in regular intervals on climate impact variables for LGED infrastructure, in an appropriate digital format with external data providers.	Manpower, Technical Assistance, Relevant data from external service providers (e.g. scientific institutes)				
	1.1.2 Systematically and continuously capture relevant lessons learnt from LGED's ongoing projects, particularly through regular user/stakeholder surveys of pilot and other infrastructure.	Equipment, Manpower, Technical Assistance, National Travel				
	1.1.3 Systematically and continuously screen national and international research projects, publications and best practices for relevant results and feed into internal knowledge management.	Equipment, Manpower, Technical Assistance, National and International Travel, relevant information from external service providers (e.g. scientific institutes)				
	1.1.4 Set up adequate formats and applications of provision and exchange of climate-relevant data, information and knowledge inside LGED, such as upgrading and extension of LGED databases, both spatial and non-spatial to provide climate-relevant information in a user-friendly way..	Equipment, Manpower, Technical Assistance				
	1.1.5 Conduct comprehensive climate impact assessments to identify and verify relevant climate impact variables and risks for all LGED infrastructure types / use of LGED infrastructure and identify mitigation options through LGED planning, designs, regulations and procedures.	Equipment, Manpower, Technical Assistance, National and International Travel				
	1.1.6 Promote action researches in collaboration with national and/or international research institutes where data, information or knowledge gaps are identified.	Equipment, Manpower, Technical Assistance, National and International Travel, relevant information from external				

<sup>4</sup> No quantitative number of frameworks/guidelines/assessments/publications/trainings is specified at the moment of submission of the funding proposal to the GCF. Specific targets will be set not earlier than one year after the effective start of the project, after the initial comprehensive institutional assessment under sub-component 1.4.1 has been conducted and validated.



		service providers (e.g. scientific institutes)	
1.2 Develop and adapt Guidelines, Standards and Procedures	1.2.1 Develop and/or upgrade internal guidelines and procedures for infrastructure planning, site supervision, procurement, maintenance and others, if applicable, to mitigate climate change impacts and risks.	Equipment, Manpower, Technical Assistance	
	1.2.2 Develop and/or upgrade standard designs and building materials for standard LGED infrastructure to mitigate climate change impacts and risks.	Equipment, Manpower, Technical Assistance	
	1.2.3 Effectively integrate climate impact assessments in the preparation of Technical Assistance Project Proposals (TPP) and Development Project Proposals (DPP) for preparation of projects funded by the National Budget and/or donors.	Equipment, Manpower, Technical Assistance	
1.3 Provide Communication, Consultation and Training	1.3.1 Establish and convene the Consultative Advisory Group (CAG) in annual events. This includes the technical and logistical preparation of events, preparation of reports on findings and follow-up on them.	Equipment, Manpower, Technical Assistance, National and International Travel	
	1.3.2 Set incentives for employees to proactively apply CReLIC products and to participate in the internal generation of knowledge and innovation for adaptation to climate change (e.g. through the establishment of LGED Annual Adaptation Award).	Manpower, Technical Assistance, small budget for prize award	
	1.3.3 Elaborate and disseminate publications of lessons learnt, best practices generated through CReLIC.	Equipment, Manpower, Technical Assistance, National Travel	
	1.3.4 Prepare annual training plan and conduct trainings for LGED staff to disseminate CReLIC results, develop capacities of CReLIC staff and to provide training on operations and maintenance of pilot infrastructure at community level.	Equipment, Manpower, Technical Assistance, National and International Travel	
1.4 Initiate development of a permanent institutional structure	1.4.1 Provide initial recommendations for permanent institutional setup one year after start of the project, based on a thorough and comprehensive institutional assessment and internal stakeholder survey.	Equipment, Manpower, Technical Assistance	
	1.4.2 Revise recommendations for permanent institutional setup three years after start of the project, based on a comprehensive review of lessons learnt from project implementation.	Manpower, Technical Assistance	
	1.4.3 Take necessary high-level GoB approvals on permanent institutional setup three years after start of the project.	Manpower	
	1.4.4 Provide flexible institutional support in the last year of the project after closing of all	Equipment, Manpower, Technical Assistance	

	other project activities to ensure smooth transition to permanent institutional structure.		
2.1.1 Build 45 new cyclone shelters	2.1.1.1 Selection of site: The new disaster shelter/school buildings with access roads are to be constructed at the same premises of the existing schools/institutions; The construction does not require any land acquisition.	School Management Committee (SMC), Upazila Education Committee, LGED Officials, Consultants Local stakeholders	The sites are selected from the priority list of shelters prepared under ECRRP
	2.1.1.2 Mobilization: Materials and equipment to the sites and establishment of labor camp.	Materials, Equipments, Manpower, Transports	Excavation trucks, loaders etc.
	2.1.1.3 Excavation: Excavation for foundation work; Dewatering	Equipments, Manpower	
	2.1.1.4 Casting and Piling: Reinforcement, concrete casting of footing or pile cap for Piling work, reinforcement, concrete casting for superstructure including beam, columns and slab.	Materials, Equipments, Manpower, Transports	Rig machine, concrete mixture, steel fixers, cement, rods etc.
	2.1.1.5 Finishing work includes partition wall, painting, electrical works etc	Materials, Equipments, Manpower, Transports	
	2.1.1.6 Site clearing and managing all construction waste	Equipments, Manpower, Transports	
2.1.2 Rehabilitate 20 existing cyclone shelters	2.1.2.1 Selection of site: The new disaster shelter/school buildings with access roads are to be constructed at the same premises of the existing schools/institutions; The construction does not require any land acquisition.	School Management Committee (SMC), Upazila Education Committee, LGED Officials, Consultants Local stakeholders	The sites are selected from the priority list of shelters prepared under ECRRP
	2.1.2.2 Mobilization: Materials and equipment to the sites and establishment of labor camp.	Materials, Equipments, Manpower, Transports	Excavation trucks, loaders etc.
	2.1.2.3 Excavation: Excavation for foundation work; Dewatering	Equipments, Manpower	
	2.1.2.4 Casting and Piling: Reinforcement, concrete casting of footing or pile cap for Piling work, reinforcement, concrete casting for superstructure including beam, columns and slab.	Materials, Equipments, Manpower, Transports	Rig machine, concrete mixture, steel fixers, cement, rods etc.
	2.1.2.5 Finishing work includes partition wall, painting, electrical works etc	Materials, Equipments, Manpower, Transports	
	2.1.2.6 Site clearing and managing all construction waste	Equipments, Manpower, Transports	
2.2 Improve 80 km of critical road connectivity	2.2.1 Mobilization: Mobilization of materials and equipment to the sites and establishment of labor camp.	Materials, Equipments, Manpower, Transports	
	2.2.2 Cleaning, excavation and rehabilitation works	Materials, Equipments, Manpower, Transports	
	2.2.3 Finishing work includes leveling, maintaining proper slopes turfing etc.	Materials, Equipments, Manpower, Transports	

	2.2.4 Site clearing and managing all construction waste	Manpower, Transports	
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\* All activities and inputs of component 3 will be specified at the beginning of the project (bilateral co-financing, no GCF funds).

## H.2. Arrangements for Monitoring, Reporting and Evaluation

This section reflects KfW standard procedure. The arrangements may be subject to revisions to reflect the outcome of the ongoing negotiations of the Accreditation Master Agreement (AMA) and Funded Activity Agreement (FAA) between KfW and GCF.

KfW will report to the GCF according to the general terms agreed between KfW and GCF, at least once a year. KfW will adhere to the highest quality reporting standards.

The PMO under LGED will prepare quarterly progress reports supported by international and national consultants with the purpose to provide KfW and relevant national authorities with timely and updated information on implementation of project components. A detailed format for reporting will be agreed on in the Project Agreement between KfW and LGED. Quality of reports needs to comply with best practice reporting standards between LGED and KfW. The progress reports will cover, among others:

- Progress of CReLIC implementation in in sub-components against agreed milestones;
- Physical progress of civil works construction against agreed milestones;
- Solutions-oriented discussion of issues and problems in the project;
- Work plans and cost estimates for the next two quarters;
- Detailed tables, overviews and maps in the Annex.

The project will be supervised continuously by the local KfW Office in close coordination with GoB and at least three times through missions from KfW Headquarters in the first two years, among others, to conduct annual reviews. A mid-term review shall be conducted at the end of the first three years of implementation. The mid-term review shall include field visits, high level meetings with GoB agencies and a broader stakeholder meeting. The permanent institutionalization of CReLIC will be a core subject of the mid-term review mission.

Within six months of the closing of the project, LGED will prepare a completion report that also includes evaluation of outcome and impact indicators. The final review will be conducted jointly by GoB and KfW. Monitoring of the impact of the project by KfW, particularly of component 1, shall continue for an estimated three years after closing of the project.

Independent impact evaluation two to three years after the closing of the project is done by KfW Evaluation Department. The project will be included in the sample from which projects for impact evaluation are drawn. If the project is selected for impact evaluation, the GCF Secretariat may be invited by KfW to join the evaluation mission at their own costs.

## I. Supporting Documents for Funding Proposal

- ☒ NDA No-objection Letter ([Annex 1](#))
- ☒ Feasibility Study ([Feasibility Package, Annex 2](#))
- ☐ Integrated Financial Model that provides sensitivity analysis of critical elements ([not applicable](#))
- ☒ Confirmation letter or letter of commitment for co-financing commitment ([Annex 3a](#)) GoB and 3b) KfW)
- ☐ Term Sheet ([not applicable](#))
- ☒ Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan ([Annex 4](#))
- ☐ Appraisal Report or Due Diligence Report with recommendations ([not applicable](#))
- ☐ Evaluation Report of the baseline project ([not applicable](#))
- ☒ Map indicating the location of the project/programme ([Annex 5](#))
- ☒ Timetable of project/programme implementation ([Annex 6](#))
- ☐ Project/programme confirmation (see the template in Annex I to the Accreditation Master Agreement)
- ☒ Indicative Detailed Cost Estimates ([Annex 7](#))

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*



## No-objection letter issued by the national designated authority



Senior Secretary  
Economic Relations Division  
Ministry of Finance  
Government of Bangladesh

Ref. : 09.431.014.05.00.009.2015-130 (1)

02 August 2015

**Subject : Funding proposal for the GCF by KfW regarding the project, 'Climate Resilient Infrastructure Mainstreaming (CRIM)' in Bangladesh**

Dear Executive Director,

As the National Designated Authority of Bangladesh, I would like to refer to the 'Climate Resilient Infrastructure Mainstreaming (CRIM)' project as included in the funding proposal submitted by KfW to us on 01 August 2015.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project, 'Climate Resilient Infrastructure Mainstreaming (CRIM)' in Bangladesh as included in the funding proposal.

By communicating our no-objection, it is implied that:

- (a) Government of Bangladesh has no-objection to the project; 'Climate Resilient Infrastructure Mainstreaming (CRIM)' in Bangladesh as included in the funding proposal;
- (b) The project as included in the funding proposal is in conformity with Bangladesh's national priorities, strategies and plans;
- (c) In accordance with the GCF's environmental and social safeguards, 'Climate Resilient Infrastructure Mainstreaming (CRIM)' project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to 'Climate Resilient Infrastructure Mainstreaming (CRIM)' project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Best regards,

Yours Sincerely,



*[Signature]* 02.8.15  
Mohammad Mejbahuddin

Ms. H  la Cheikhrouhou  
Executive Director  
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