Infrastructure In SHOUHARDO

(SHOUHARDO, SHOUHARDO II and SHOUHARDO III)

June 2022

Written by: Anjar Alam,
Team Leader-Infrastructure & Environment, SHOUHARDO III Program

Edited by: A. T. M. Zubaidur Rahman,
Hear of Partnerships, Operations and Resources, SHOUHARDO III Program

Preface

Strengthening Household Ability to Respond to Development Opportunities (SHOUHARDO) III is a Resilience Food Security Activity (RFSA) funded by the United States Government through the United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA), with complementary funding from the Government of Bangladesh (GoB). SHOUHARDO III is successor of SHOUHARDO I (period from October 2004 to May 2010) and SHOUHARDO II (June 2010 to September 2015) programs. All these programs had infrastructure intervention under which construction and maintenance of large and small structures were done through LGED and implementing partner NGOs. SHOUHARDO in its different phases included infrastructure interventions mainly for the following reasons:

i. infrastructures like homestead raising, mound protection wall, school cum flood shelter, cyclone shelter maintenance to protect households and communities from damage during natural calamities like floods, cyclone, wave erosion;
ii. infrastructures to improve water and sanitation condition like latrine installation, tube well installation/repair;
iii. infrastructures to mitigate drainage congestion and waterlogging like pipe/box culverts;
iv. infrastructures to create community/GoB facilities for collective action and economic growth like Union Parishad (UP) complex, Market, Community resource center;

In the char regions, the main infrastructure intervention was the raising the elevation of homestead areas of vulnerable poor households so that the homestead area is above flood level and school cum flood shelters where people could take shelter during flood; in haor areas, the main infrastructure intervention was works to protect village mounds from wave erosion; in coastal region cyclone shelter maintenance was major intervention.

Contents

Acronyms

BDT	:	Bangladeshi Taka
BFS	:	Brick Flat Soling
CAP	:	Community Action Plan
CARE-DD	:	CARE Direct Delivery
CC	:	Cement Concrete
CFW	:	Cash for Work
CRC	:	Community Resource Center
DRR	:	Disaster Risk Reduction
ECCD	:	Early Child Care for Development
EKATA	:	Empowerment, Knowledge, and Transformative Action
FDP	:	Food Distribution Center
GoB	:	Government of Bangladesh
HBB	:	Herring Bone Bond
iDE	:	International Development Enterprises
IGA	:	Income Generation Activity
LCS	:	Labor Contracting Society
LGED	:	Local Government Engineering Department
MPW	:	Mound Protection Wall
NBD	:	Nation Building Department
NOC	:	No Objection Certificate
PEP	:	Poor and Extreme Poor
PaBS	:	Participant based Sample Survey
PIC	:	Project Implementation Committee
PNGO	:	Partner Non-Government Organization
PSIEE	:	Pourashava Specific Initial Environmental Examination
RCC	:	Reinforced Cement Concrete
SCFS	:	School cum Flood Shelter
SDC	:	Slum Development Committee
SHOUHARDO	:	Strengthening Households Ability to Respond to Development Opportunities
SO	:	Strategic Objective
SSIEE	:	Scheme Specific Initial Environmental Examination
SWIRL	:	Scaling-up WASH Innovations in Remote Locations
UP	:	Union Parishad
USAID	:	United State Agency for International Development
VDC	:	Village Development Committee
VRC	:	Village Resource Center
VSIEE	:	Village Specific Initial Environmental Examination
VSLA	:	Village Saving and Loan Association
WASH	:	Water, Sanitation and Hygiene

1 Introduction

CARE's SHOUHARDO (Strengthening Households Ability to Respond to Development Opportunities) I, II, III programs are funded by the United State Agency for International Development (USAID) and Government of Bangladesh (GoB). These programs intend to ensure the improved availability and economic access to food for targeted vulnerable households through strengthening livelihoods and securing entitlements for rights and services. The programs are primarily designed to address the underlying causes that can lead to reducing, minimizing or eliminating the risks and vulnerabilities facing food insecure populations mainly in the riverine Char, deep Haor, coastal zones and urban slums areas of Bangladesh. SHOUHARDO I, SHOUHARDO II and SHOUHARDO III programs, under the framework of its goal and objectives, intended to implement different types of structural schemes in different geographical areas of Bangladesh. Infrastructures contributed directly to water & sanitation, disaster risk mitigation and climate change adaptation. The schemes are identified from the Community Action Plan (CAP) to support livelihoods or enhance community resilience by reducing risk to floods and other natural disasters as well as to cope with the effect from climate change.

2 Types of Infrastructure

Infrastructures designed under SHOUHARDO, SHOUHARDO II and SHOUHARDO III programs contributed to attain the goal of different Strategic Objective (SO)/Purpose and thus are integrated under the different SOs/Purposes as follows:

Infrastructure related to Income Enhancement:

1. Cash for Work (CFW): Short-term employment relating infrastructures are generally called Cash for Work (CFW) which are integrated with the SO/Purpose of Agriculture and livelihood to create short term employment opportunities of poor and extreme poor (PEP) program participants during the lean period[1]. These types of infrastructures generally include:

   (i) Homestead plinth raising
   (ii) Raising of community ground (institution's ground)
   (iii) Earthen village road maintenance

Figure-1: Homestead Plinth Raising

Besides creating short term employment during lean period, raised homestead and raised community ground structures provided flood free spaces to the PEP in the Community for living, rearing of poultry/cattle and year round homestead gardening during monsoon flood, in turn reducing the hazards during flood, protecting the lives and assets of poor communities and contributing to disaster risk mitigation.

[1] Lean season: When agricultural activities are low; usually from mid-October to December and March to April

2. Improvement of Rural Markets: SHOUHARDO and SHOUHARDO II programs contributed in improving some rural markets to enhance the market facilities of the agriculture produces of the PEP participants and to improve their livelihoods by creating scope of economic activities in the rural market/bazar.

Figure-2: Household Latrine

WASH Infrastructure:

The programs constructed different types of WASH infrastructures which are integrated with the SO/Purpose Health and Nutrition/WASH. These types of infrastructures include:

1. Community latrine
2. Household latrine
3. Installation and maintenance of tube-well
4. Construction of tube-well platform
5. Dug-well
6. Dustbin

Figure-3: Community Latrine

These structures provided improved water sources and hygienic latrine facilities to the PEP participants of the programs. Some latrine complexes, pipe water supply and surface drains are also constructed in the urban areas during SHOUHARDO program to minimize the unhygienic environment of slums. All those WASH structures contributing to minimize the water borne diseases and to improve the overall health condition of the villagers and slum dwellers.

Figure-4: Dustbin in urban slum

Disaster Risk Reduction (DRR) Infrastructure:

The programs implemented different types of infrastructures to minimize the risk of disaster such as:

Figure-5: Tube-well Platform

1. Drainage Culverts: Drainage culverts are constructed on village roads to minimize the water logging and to make the road passable by the villagers for traffic and freight. These culverts provided scopes of free movement/ passing of surface water, provided scope for transporting agriculture produces and reducing the risk during flood.

Figure-6: U-Shaped Drainage Culvert

Figure-7: School cum Flood Shelter

2. School cum Flood Shelters: School cum flood shelters are implemented by the programs which are providing safe shelter facilities to the villagers during flood where PEP participants get temporary shelter with their belongings and livestock during devastating floods. Besides that, the structures are functioning as educational institutions during normal weather condition.

Figure-8: Brick Mound Protection Wall

3. Mound Protection Walls: Mound extension/Mound protection walls are constructed in the Haor areas to protect the elevated mounds from wave erosion and to protect the lives and assets of PEP participants living on the mounds in Haor. Besides reducing the loses due to wave erosion, the extended spaces of mound provided scope to the PEP participants for vegetable gardening.

4. Maintenance of Cyclone Shelters: SHOUHARDO and SHOUHARDO II programs also did maintenance of cyclone shelters in the coastal area to make the cyclone shelters usable and to provide safe shelter facilities to the PEP participants of the program during cyclone.

Figure 9: Maintenance of Cyclone Shelter

Infrastructure related to Community Mobilization and Governance:

1. Community Resource Center (CRC): The programs constructed CRCs in different villages. These CRCs provided scope to the village groups for their meeting such as Village Development Committee (VDC) meeting, Empowerment, Knowledge, and Transformative Action (EKATA) group meeting, mother's group meeting, youth group meeting, Village Saving and Loan Association (VSLA) group meeting as well as provided scope to the Nation Building Department (NBD) service providers for delivering their services at the village level. During SHOUHARDO II period, CRCs were also designed to be used as Early Child Care for Development (ECCD) center.

Figure-10: Low Cost Community Resource Center (CRC)

2. Union Parishad (UP) Complex: During SHOUARDO program only, some UP complexes were constructed with the technical assistance of Local Government Engineering Department (LGED) to support better facilities for local elected bodies and local NBD officials for providing services to the PEP communities.

Figure-11: Union Parishad Complex

Other Types of Infrastructures:

The programs built some other types of infrastructures as per community need to facilitate the economic activity, improve the livelihood and reduce the sufferings of the PEP people. Such infrastructures are footpaths and drains in urban slums, bamboo bridge, school maintenance/renovation, maintenance of HBB/BFS road, hilly stair/stair in mound protection wall, etc.

Figure-12: School Renovation

3 Geographical Area Coverage

SHOUHARDO III Program: SHOUHARDO III program worked only in rural areas. SHOUHARDO III did not work in the urban area, also did not work in the coastal region. Summary of the rural regions where infrastructures are constructed, including flood recovery homestead raising, is presented in theTable-1 below.

Table-1: Rural areas where infrastructures are constructed in SHOUHARDO III program

Coverage	Char	Haor	Total	Name of District
No. of District	4	4	8	**Char:** Gaibandha, Jamalpur, Kurigram and Sirajganj
No. of Upazila	12	11	23	**Haor:** Habiganj, Kishoreganj, Netrakona and Sunamganj
No. of Village	419	225	644	

SHOUHARDO II Program: SHOUHARDO II program also worked only in rural areas including coastal areas. SHOUHARDO II did not work in the urban area. Summary of the rural regions where infrastructures are constructed is presented in the Table-2 below.

Table-2: Rural areas where infrastructures are constructed in SHOUHARDO II program

Coverage	Char	Haor	Coastal	Total	Name of District
No. of District	9	1	1	11	**Char:** Bogra, Dinajpur, Jamalpur, Kurigram, Pabna, Mymensingh, Nilphamari, Rangpur and Sirajganj **Haor:** Sunamganj **Coastal:** Cox's Bazar
No. of Upazila	26	3	2	31	
No. of Village	775	78	59	912	

SHOUHARDO Program: SHOUHARDO program worked both in rural and urban areas. Infrastructures are constructed both in rural and urban areas which includes the coastal zone. Summary of the rural regions where infrastructures are constructed in SHOUHARDO program is presented in the Table-3 below.

Table-3: Rural areas where infrastructures are constructed in SHOUHARDO program

Coverage	Char	Haor	Coastal	Total	Name of District
No. of District	11	4	3	18	**Char:** Bogra, Gaibandha, Jamalpur, Kurigram, Lalmonirhat, Nilphamari, Pabna, Rangpur, Sherpur, Sirajganj and Tangail **Haor:** Habiganj, Kishoreganj, Netrakona and Sunamganj **Coastal:** Chittagong, Cox's Bazar and Noakhali
No. of Upazila	49	33	21	103	
No. of Village	825	630	526	1,981	

Summary of urban areas where infrastructures are constructed in SHOUHARDO program is presented in the Table-4 below.

Table-4: Urban areas where infrastructures are constructed in SHOUHARDO program

Coverage	Char	Haor	Coastal	Total	Name of City Corporation/Pourashava
No. of District	9	3	2	14	**Char:** Gaibandha PS, Jamalpur PS, Kurigram PS, Lalmonirhat PS, Saidpur PS, Ishwardi PS, Pabna PS, Rangpur PS, Sirajganj PS, Tangail PS **Haor:** Bhairab PS, Durgapur PS, Mohongonj PS, Netrakona PS, Sunamganj PS **Coastal:** Chittagong City Corporation, Cox's Bazar PS
No. of City Corporation / Pourashava	10	5	2	17	
No. of Slum	70	39	28	137	

4 Modality of Implementation

A multi-dimensional approach is applied for infrastructure implementation under SHOUHARDO, SHOUHARDO II and SHOUHARDO III programs. Generally, small structures are implemented through Partner Non-Government Organizations (PNGOs) and CARE Direct Delivery (CARE-DD). CARE-DD was present only in SHOUHARDO and SHOUHARDO II programs and there was no CARE-DD in SHOUHARDO III. Comparatively large structures are implemented through LGED. City Corporation/Pourashava and PNGOs implemented urban structures only in SHOUHARDO program. SHOUHARDO II and SHOUHARDO III programs did not work in urban areas. Small structures by PNGOs and CARE-DD are implemented either through contractors applying the bidding process or through the Labor Contracting Society (LCS). CFW schemes are implemented using Project Implementation Committee (PIC) and direct payment to the CFW laborers. Large structures are implemented by LGED using the contractors through the open bidding following the GoB procurement policy. Programs materialized a set of implementation steps for the construction of infrastructures, as illustrated in the Table-5 below.

Table-5: Steps for implementation of infrastructure schemes

Sl. #	Implementation Step	Brief Description
1	Development of Infrastructure Guidelines	At the beginning of infrastructure implementation, SHOUHARDO, SHOUHARDO II and SHOUHARDO III programs developed specific planning and implementation guidelines (Infrastructure Guideline, CFW Guideline, LCS Guideline, LGED Large Structure Guideline).
2	Orientation to the Concerned Staff	Oriented the concerned PNGO and CARE staff on infrastructure implementation process and environmental management process.
3	Primary Identification of the Needs of Infrastructures from CAP	Primarily identified the needs of infrastructures from the CAP prepared by the VDC and Community. PNGO/CARE selected the schemes from CAP within available resources.
4	Collection of No Objection Certificate (NOC) where applicable	Program staff collected NOC for the execution of infrastructure where applicable.
5	Pre-Work Survey of Scheme	Program technical staff conducted pre-work survey /pre-assessment of schemes. For LGED structures, CARE and LGED engineers jointly conducted the pre-survey of schemes.
6	Environmental Screening	Generally, environmental screening is done by program staff during pre-survey. The program's environmental guidelines are followed for

		environmental screening of schemes. For LGED structures, CARE and LGED engineer jointly conducted environmental screening.
7	Preparation of Estimate, Funding Request	The program technical staff prepared cost estimates and funding requests for infrastructure schemes. Regional Coordinator generally approves the funding requests..
8	Formation of PIC/LCS or selection of contractor	Different approaches are followed for the construction of infrastructures. CFW schemes are implemented through PIC. Small structures of PNGO's and CARE-DD are constructed by LCS or contractors as feasible. LGED large structures are constructed by the LGED contractors following GoB policies.
9	Orientation to the PIC/LCS on Construction Procedures	Programs provided orientation to each PIC and LCS on construction procedures, rules and regulations of infrastructure/CFW scheme construction following the program's guidelines.
10	Agreement with the PIC/LCS	A written agreement is made with each PIC and LCS for construction of infrastructures. For contractors, CARE procurement policy is followed and in the case of LGED structures, LGED followed GoB's bidding and awarding policy.
11	On-going monitoring of infrastructure implementation	During the on-going stage, program staff monitored the quality and progress following the guidelines. Program staff also conducted environmental monitoring. LGED schemes are jointly monitored by CARE and LGED engineers.
12	Payment to the CFW laborers / LCS / Contractors	CFW scheme's payments are directly made to the CFW laborers by CARE/PNGO staff based on labor daily attendance sheet and master role. Advances are paid to the LCS on installments following the LCS guideline through the bank account. Payments are given to LGED for LGED structures based on actual work accomplishment as per the joint monitoring report. Final payments to all structures are paid after post-work survey and the successful completion of the scheme.
13	Post Work Survey of scheme	After completion of each scheme, post-work survey is conducted in-person by the program staff following the program guidelines. For LGED structures, CARE and LGED engineers jointly conducted the post-work survey.
14	Handover of structures to the Community	After finishing infrastructure implementation, infrastructures are handed over to the Community following the handover procedure of the programs. During handover, a discussion is made with VDC on community maintenance of infrastructures.

5 Summary of Infrastructures under SHOUHARDO III Program

SHOUHARDO III program implemented different infrastructures from FY'2016 to FY'2020 through the PNGOs and LGED. SHOUHARDO III program did not work in urban areas. There was no CARE Direct Delivery in SHOUHARDO III program. The summary of infrastructure constructed under SHOUHARDO III program through different implementation agency is presented in the Table-6 below.

Table-6: Infrastructure summary of SHOUHARDO III Program

Sl. #	Types of Structures	Total #	Area		Implemented by	
			Char	Haor	PNGO	LGED
1	CFW - Community Ground Raising	4	0	4	4	0
2	CFW - Homestead Raising	681	488	193	681	0
3	CFW - Earthen Road Maintenance	9	0	9	9	0
4	Latrine (Household Latrine)	2,210	1,601	609	2,210	0
5	Drainage Structure (U-Drain)	90	65	25	90	0
6	School cum Flood Shelter	14	14	0	0	14
7	Mound Protection Wall	8	0	8	0	8
8	Low Cost CRC	299	185	114	299	0
9	Flood Recovery Household Raising	1,744	1,744	0	1,744	0
	TOTAL	**5,059**	**4,097**	**962**	**5,037**	**22**

CFW structures under SHOUHARDO III are implemented by using fund provided by the GoB and all other structures are implemented by using fund provided by the USAID. For CFW schemes, priority was given to homestead raising and much higher number of homestead raising is done in Char area. In Haor area, there are usually less scope of homestead raising due to nature of Haor settlement, and comparatively less number of homestead raising is done in Haor. Besides homestead raising, some other schemes like community ground raising and earthen road maintenance is done in Haor under CFW. CFW schemes created more than 150,000 person-days short term work employment for PEP program participants during the lean period where around 40% was female participation. Flood recovery homestead raising schemes also employed 33,204 PEP participants for 9 days' work for each participant created another 298,836 person-days short employment as post flood recovery.

In addition, as COVID 19 response activity SHOUHARDO III program has installed total 274 hand washing stations (203 in 1st phase and 71 in 2nd phase) in clinic/health centers. Program has also installed 47 billboards in remote locations (25 in 1st phase and 22 in 2nd phase) for delivering specific messages to the program participants. Among the total 47 billboards, 24 billboards are installed in Char area and 23 billboards are installed in Haor area.

6 Summary of Infrastructures under SHOUHARDO II Program

SHOUHARDO II program implemented various types of infrastructures from FY'2011 to FY'2015 through direct delivery by CARE and in partnership with PNGOs and LGED in the rural working areas of SHOUHARDO II program. SHOUHARDO II program also did not work in urban areas. The summary of infrastructure constructed under SHOUHARDO II program through different implementation agency is presented in the Table-7 below.

Table-7: Infrastructure summary of SHOUHARDO II Program

Sl. #	Types of Structures	Total #	Area			Implemented by		
			Char	Haor	Coastal	PNGO	CARE-DD	LGED
1	Latrine (Household Latrine, Community Latrine)	4,171	4,147	24	0	3,714	457	0

2	Drainage Structure (Box Culvert, Pipe Culvert, U-Drain)	142	119	3	20	97	33	12
3	Water Structure (Tube-well Installation, Tube-well Maintenance/Platform)	3,428	3,246	87	95	2,997	431	0
4	Cyclone Shelter Maintenance	16	0	0	16	0	0	16
5	School cum Flood Shelter	31	31	0	0	0	2	29
6	School maintenance/Renovation	143	125	17	1	128	15	0
7	Community Ground Raising	63	60	3	0	46	17	0
8	Homestead Raising	2,016	1,953	63	0	937	1,079	0
9	Improvement of Rural Market	4	4	0	0	0	0	4
10	Mound Protection (Mound Extension, Mound Protection Wall)	11	0	11	0	6	0	5
11	CRC/ECCD Construction	86	78	6	2	74	12	0
12	Road Maintenance (Earthen, BFS/HBB)	111	83	5	23	37	74	0
13	Other Types of Structure	12	0	6	6	11	0	1
	TOTAL	**10,234**	**9,846**	**225**	**163**	**8,047**	**2,120**	**67**

7 Summary of Infrastructures under SHOUHARDO Program

SHOUHARDO program implemented various infrastructures from FY'2006 to FY'2010 through CARE-DD and in partnership with PNGOs, Pourashava/City Corporation and LGED in the rural and urban working areas of SHOUHARDO program. The summary of infrastructure constructed under SHOUHARDO program through different implementation agency are listed in the Table-8 below.

Table-8: Infrastructure summary of SHOUHARDO Program

Sl. #	Types of Structures	Total #	Area		Implemented by			
			Rural Area	Urban area	PNGO	CARE-DD	LGED	Pourashava / CC
1	Latrine (Household Latrine, Community Latrine, Community Latrine Complex, Bath Room)	6,783	5,953	830	5,833	871	0	79
2	Drainage Structure (Bamboo bridge, Box Culvert, Pipe Culvert, U-Drain, Drain, RCC Slab over Drain)	310	158	152	191	32	0	87
3	Water Structure (Tube-well Installation, Tube-well Maintenance/Platform, Dug Well, Pipe Water Supply)	5,980	5,083	897	5,378	438	0	164
4	Pathway (Footpath, Footpath with Drain, Pathway)	96	0	96	46	1	0	49

5	Cyclone Shelter Maintenance	56	56	0	6	4	46	0
6	Dustbin	55	0	55	52	0	0	3
7	School cum Flood Shelter, School maintenance / Renovation	140	129	11	94	22	18	6
8	Community Ground Raising	544	538	6	484	56	0	4
9	Homestead Raising	8,788	8,599	189	6,670	2,080	0	38
10	Market Development	68	65	3	33	6	27	2
11	Mound Protection (Mound Extension, Mound Protection Wall, Wave Protection Wall)	133	130	3	94	31	8	0
12	Union Parishad Complex	21	21	0	0	0	21	0
13	ECCD/VDC/SDC/CRC Meeting Room	212	180	32	167	34	0	11
14	Road Maintenance (RCC Road, CC Road, BFS Road, HBB Road, Earthen Road, Submersible Road)	508	348	160	327	41	4	136
15	Other Types of Structure	138	101	37	93	21	0	24
	TOTAL	**23,832**	**21,361**	**2,471**	**19,468**	**3,637**	**124**	**603**

Environmental screening and environmental monitoring in different phase of the programs are done following the program's environmental guidelines and tools as illustrated in the Table-9 below.

Table-9: Environmental screening and monitoring

Program Phase	Environmental Screening and Monitoring Tools	Reference (Environmental Documents)
SHOUHARDO	VSIEE/PSIEE, SSIEE and Environmental Monitoring Format	Environmental Compliance Management Guidelines of SHOUHARDO Program
SHOUHARDO II	VSIEE/SSIEE and Environmental Monitoring Format	Environmental Compliance Management Guidelines of SHOUHARDO II Program
SHOUHARDO III	Environmental Due Diligence Checklist Form and Standard Site Visit Format	Environmental Compliance Management Guidelines of SHOUHARDO III Program

8 Partnership with LGED for Implementation of Large Structure and Maintenance of Structure

CARE Bangladesh and LGED signed an agreement with the aim of–

(i) Using USG fund, implement comparatively large structures thorough the technical assistance from LGED those were technically a bit complex.
(ii) Using GoB fund, maintenance of infrastructures by LGED those were constructed by the SHOUHARDO and preceding programs.

Details of LGED structures are given below.

8.1 LGED Implemented Large Structure

SHOUHARDO III Program: During the SHOUHARDO III program, LGED and CARE Bangladesh signed an agreement on 2 March 2017 for implementation of large structures and maintenance of structures constructed by SHOUHARDO and predecessor programs where the USAID provided fund for construction of large structures and GoB provided fund for maintenance of structures constructed by the predecessor programs. The period of this agreement was effective from 1 February 2017 to 30 June 2020. Later on, during the extension phase of the program, LGED and CARE signed an extension agreement, signed on 2 July 2020 by both parties for maintenance of structures constructed by SHOUHARDO and predecessor programs where GoB provided the funds. The period of this extension agreement is effective from 1 July 2020 to 30 June 2022.

According to the original agreement between LGED and CARE Bangladesh, LGED agreed to implement school cum flood shelter (SCFS) and brick mound protection wall (MPW) of the SHOUHARDO III program. LGED constructed fourteen (14) school cum flood shelters and eight (8) brick mound protection walls within allocated resources in FY18 and FY19. The schemes were primarily assessed by CARE and LGED field team and finalized in a tripartite review meeting between USAID, LGED and CARE. LGED has completed construction work of those schemes by June 2020. LGED constructed mound protection walls in three working districts out of total four districts in Haor. LGED made several attempts to implement mound protection wall in Sunamganj district, but could not implement the MPWs due to unavailability of eligible contractors. LGED shifted the MPWs in another district within SHOUHARDO III program. Around 6,483 households of which 4,148 are PEP households, living in 14 villages are able to take shelter in the constructed 14 school cum flood shelters to protect lives and cattle/poultry from flood water. Around 1,646 households of which 844 are PEP households, living in 8 villages are protected from wave erosion by constructing eight mound protection walls. The summary of 22 LGED structures is given in the Table-10 below:

Table-10: Summary of LGED structures in SHOUHARDO III program

Implementation Year	Type of Structures	Number of Structures
FY18	School cum Flood Shelter	7
	Brick Mound Protection Wall	4
FY19	School cum Flood Shelter	7
	Brick Mound Protection Wall	4
	Total	**22**

SHOUHARDO II Program: SHOUHARDO II program from FY2012 to FY2015 constructed 67 comparatively large structures with support from LGED. These structures include single/multiple vent box-culverts, guide walls for slope protection, improvement of rural market, school cum flood shelters, maintenance of cyclone shelters and brick wave protection walls. Summary of 67 LGED structures is furnished in the Table-11 below:

Table-11: Summary of LGED structures in SHOUHARDO II program

Sl. #	Types of Structures	Number of Structures
1	School cum Flood Shelter	29
2	Brick Mound Protection Wall	5
3	Maintenance of Cyclone Shelter	16

4	R.C.C. Box-Culvert	12
5	Improvement of Rural Market	4
6	Guide Wall	1
TOTAL		**67**

SHOUHARDO Program: SHOUHARDO program from FY2007 to FY2009 constructed 124 comparatively large structures with support from LGED. These structures include school cum flood shelters, rural market development, UP complex, cyclone shelter maintenance, RCC/brick wave protection walls, RCC submergible road etc.

8.2 LGED Implemented Maintenance Scheme

SHOUHARDO III Program Period: According to the host country agreement for SHOUHARDO III, Government of Bangladesh allocated resources to LGED during SHOUHARDO III program period and also during the extension phase of the program for maintenance of infrastructures constructed by SHOUHARDO and predecessor programs. LGED received installment of resources from the GoB every year and continued to maintain the infrastructures as presented in the Table-12 below:

Table-12: LGED implemented maintenance schemes during SHOUHARDO III program period

FY	No. of Schemes	Types of Schemes
FY2017-2018	14	Maintenance of road, school cum flood shelter, market
FY2018-2019	17	Maintenance of road, UP complex, drainage culvert
FY2019-2020	5[2]	Maintenance of road, mound protection wall, UP complex
FY2020-2021	12[3]	Maintenance of road, UP complex, mound/ wave protection wall
FY2021-2022	13	Maintenance of road, mound protection wall, school cum flood shelter
TOTAL	**61**	

SHOUHARDO II Program Period: According to the host country agreement for SHOUHARDO II, Government of Bangladesh allocated resources to LGED for maintenance of infrastructures constructed by SHOUHARDO and predecessor programs. LGED received installment of resources from the GoB every year and continued to maintain the infrastructures as presented in the Table-13 below:

Table-13: LGED implemented maintenance schemes during SHOUHARDO II program period

FY	No. of Schemes	Types of Schemes
FY2010-2011	6	Maintenance of roads
FY2011-2012	36	Maintenance of roads, market, wave protection wall, school cum flood shelter, UP complex
FY2012-2013	35	Maintenance of road, market, mound/wave protection wall, culvert, UP complex, school cum flood shelter
FY2013-2014	35	Maintenance of road, market, mound/wave protection wall, culvert, UP complex, school cum flood shelter

[2] Initially planned 6 schemes, but one scheme is carried over to the following year.
[3] Initially planned 13 schemes, but due to resource limitation, one scheme is carried over to the following year.

FY2014-2015	54	Maintenance of road, market, mound/wave protection wall, school cum flood shelter, UP complex, maintenance of cyclone shelter
TOTAL	**166**	

9 Infrastructures Handover to the Community

Following the handover processes and guidelines of each program, community-level small infrastructures constructed by the programs were mostly handed over to the community groups, primarily to the Village Development Committee (VDC) of the concerned village. During the handover of infrastructure to the VDC, a discussion on community maintenance of infrastructure was also done by the program staff. List of structures were also provided to the respective UP for extending maintenance support in the future. UP complexes were handed over to the Union Parishad by organizing a handover ceremony in the Union Parishad. In the case of rural market development, deed of shops was handed over to the women entrepreneurs by organizing a handover ceremony at the market place.

Figure-13: Deed handover ceremony-deed of shops handed over to the women entrepreneurs

Figure-14: Union Parishad Complex handover ceremony

10 Benefits/Contribution of Infrastructures

SHOUHARDO III program raised 1,744 homes above flood levels as flood recovery activity in FY20. According to a USAID blog on plinths raising, "*these raised homes keep the families safe, along with their livestock and gardens. Many of the homeowners living on the plinths have taken in neighbors whose houses were flooded*".

Figure-15: Flood recovery raised households. Neighbors have taken shelter in the raised homestead during flood

The raised plinths not only saved them the hustle of moving, but their animals and property are also safe. Some have become hosts to their neighbors and relatives during this critical time. Rehana, a program participant from Bakshiganj in Jamalpur district shared, *"People's lives are in danger with the ongoing flood. They come to take shelter when they have nowhere else to go. I have taken in my neighbor's family with their cattle and a small child"*. Monowara, another program participant from Fulchari in Gaibandha district shared *"Never before I could stay at my home during floods, I had to take shelter elsewhere. This year, my neighbors have taken shelter at my place as I have a raised house"*.[4]

Besides the flood recovery activity in SHOUHARDO III, all three phases of programs SHOUHARDO, SHOUHARDO II and SHOUHARDO III raised many homestead plinths through Cash for Work (CFW). During SHOUHARDO program period (1st phase), a consultant, named Ian Tod, conducted a study on the effectiveness of homestead raising and mound protection wall of SHOUHARDO program in March 2008. Some benefits of creating a flood-free homestead area from the study findings include:

Figure-16: Vegetable gardening in the raised homestead during monsoon flood

- More dry space for domestic activities such as food preparation, cooking, child rearing, managing the care of the elderly within the household.
- In the wet environment of a flooded house, diarrhea and skin diseases are common. Such diseases greatly decreased when households were kept dry.
- More scope for homestead gardens.
- Scope of poultry and livestock rearing at home for more extended periods, and sell them when prices are higher.
- Provided shelter to the livestock and avoided to shift them to another places during flood.
- Building maintenance costs are reduced as the structure is no longer submerged.
- Created short term employment during construction allowed villagers to purchase essential items.

[4] For more information please refer to 1) SHOUHARDO III program, Plinths for flood - https://shouhardo.carebangladesh.org/en_US/shouhardho_news/plinths-for-floods-how-this-infrastructure-played-a-critical-role-in-peoples-survival/
2) Infrastructure - https://shouhardo.carebangladesh.org/en_US/infrastructure/

- Homesteads could offer shelter to the neighbors with non-raised homesteads. It is observed that the neighbors have taken shelter with their asset during the flood on the raised homesteads.
- Homestead gardening and other IGA activities could be continue during and after the Flood.
- Women were able to carry out their domestic duties more easily during flood.
- Created scope for planting and nurturing trees.

Mound protection walls constructed in Haor protected the mounds (elevated villages) from wave erosion and saved the lives and houses of PEP participants. Some long-term benefits of the wave protection wall from the consultant Ian Tod's study findings include:

Figure-17: Vegetable production in the extended portion of Mound Protection Wall

- Improved health of children due to drier environment around homesteads.
- Created more space for vegetable production on the extended parts of mound protection walls.
- When house is located near the edge of mound, there is severe threat of erosion during monsoon. MPW saved cost for shifting the house to a safe location or taking extra measures to protect the house from erosion.
- During monsoon, people leave with fear and often stay home to construct and/or to maintain protection works to protect own homestead/homestead land from wave erosion. MPW protected their houses as there is no longer requirement to construct and maintain protection works for homestead land.
- Improved security of settlement.

School cum Flood shelters provided safe shelter facilities to the community people of Char land temporarily during the devastating floods. People with their cattle and belongings have taken temporary shelter during the flood. It reduces the loss of lives and assets of poor people during the disaster period.

Figure-18: School cum flood shelter provided safe shelter facility to the community people during flood

Access to improved sanitation in SHOUHARDO III working area increased from 15.5% to 86.9% in FY21 (ref. M&E IPTT table, Participant based Sample Survey-PaBS result of FY21). Household latrines along with other WASH activities such as community awareness, Open Defecation Free (ODF) village activities and iDE supported Scaling-up WASH Innovations in Remote Locations (SWIRL) activities of SHOUHARDO III program have contributed significantly to achieving this result. People also received latrine and tube well support from UPs and other NGOs who are working in the program area through collaboration and coordination. The Program provided only ring and slab for pit/offset pit latrines and fencing is done by the

program participants (household owners) on their own as per their capability. iDE is now promoting improved and context specific sanitary latrines through market led approach as a technical partner of SHOUHARDO III program. Program participants are now much more aware of using sanitary latrine. They procured improved latrines from latrine producers at discounted price where SATO pan is used instead of water seal for reducing use of water quantity and cleanliness of pit latrines.

Drainage culverts reduced the sufferings of community by providing easier communication to pedestrian traffic, rickshaw/van and for transportation of goods. Poor villagers easily got access to the local institutions and services due to better communication facilities. Farmers got better facilities for transporting their agri-produces. Along with farmers, the elderly and students were also greatly benefited

Figure-19: Box Culvert reduces sufferings and ensures easy communication for school going children and elderly poor people

Figure 20: Box Culvert facilitates easy transportation of agri-produces

due to the construction of culverts over the water passage/canal on the village roads, which exist on the village roads for natural movement of surface water.

Low-cost community resource centers (CRCs) are the community structures, community organize community level meetings in the CRCs like VDC meetings, community group meetings, EKATA group meetings, mother group meetings, youth/adolescent group meetings, VSLA meetings, in the CRCs and it also provide spaces for delivering services to the community by the local level NBD officials such as technical support by the Sub Assistant Agriculture Officer (SAAO), Immunization services by the health department. Other local NGOs also using this structure as their service delivery points. The UP members use the CRC for dealing with the community including local salish/arbitration. The community has taken responsibility for maintaining CRCs as and when required.

Figure-21: Adolescent girls group meeting in CRC

Consultant Ian Tod and Golam Mustafa conducted a thematic study in May 2009 for infrastructures constructed by the SHOUHARDO program.

Wave protection walls provide much effective solution to a major problem of Haor community against threat of erosion. Programs should find the sources for funding for mound protection walls to meet the priority demand of many Haor communities.

The working areas of different phases of SHOUHARDO programs were very harsh and dynamic environments. Therefore, better risk analysis of climate change is required for infrastructure development so that climate risk can be minimized as much.

SHOUHARDO, SHOUHARDO II and SHOUHARDO III programs constructed many infrastructures in rural villages and urban slums. Systems to ensure the follow-up for maintenance of the infrastructures have not always been much functional and can be strengthen for better sustainability of infrastructures.

11 Conclusion

Infrastructures constructed under SHOUHARDO, SHOUHARDO II and SHOUHARDO III programs clearly benefited and contributed a lot on the lives of program's PEP participants. In short, homestead raising protected the houses of PEP participants from inundation by flood water, provided safe shelter facilities during flood and protected lives and assets of PEP, also created facilities for year-round vegetable production, livestock and poultry rearing and domestic work on the flood free raised grounds. WASH structures such as installation and maintenance of water points, installation of latrines, construction of surface drains, dustbins etc. have wider effect to increase the access of the PEP participants to the safe water, reduce the open defecation and provide hygienic sanitation facility, drain-dustbin provide facility for better management of solid and household waste and hence reduce environmental pollution as well as risk of waterborne diseases within the poor community and greatly benefit to the child and women. Maintenance of multi-purpose cyclone shelters in coastal area and construction of school cum flood shelters in char land provide safe shelter facilities to the PEP households along with their cattle and belongings, reduce hassle and increase safety of lives and assets during flood and cyclone. Mound protection walls in haor area is the priority demand of haor community which minimize the risk of wave erosion and protect PEP houses from erosion. Usually PEP households living near the edges of mounds have to live with anxiety and fear during monsoon period and need to stay home and be always alert even at night and spend lot of resources to protect their houses from erosion. Mound protection walls minimize their extreme sufferings.

While soft activities enhance knowledge and practice towards improved life; provisioning of appropriate infrastructures in SHOHARDO significantly contributions to the different SOs/Purposes/Result Areas of the programs.

Annex: At a glance coverage and types of Infrastructure in SHOUHARDO (I, II, III) Programs

SHOUHARDO program followed a need and priority approach in selection of infrastructure schemes through community participation. SHOUHARDO program (October 2004 to May 2010) implemented infrastructure schemes in 1,981 villages from 18 districts and 137 slums under 17 City Corporation/Pourashava. Out of the 1,981 villages; 825 villages were in Char region, 630 villages were in Haor region and 526 villages were in Coastal Region. Besides the rural villages, program also covered 137 slums of which 70 slums were in Char, 39 slums were in Haor and 28 slums were in Coastal Regions in urban areas. In SHOUHARDO II program (June 2010 to September 2015) the number of villages where infrastructure schemes were implemented were 912 in 11 districts; 775 villages were in Char, 78 villages were in Haor and 59 villages were in Coastal area. SHOUHARDO III (30 September 2015 to 31 December 2022) program implemented infrastructures in 644 villages from 8 districts where 419 villages were in Char and 225 villages were in Haor Regions. SHOUHARDO III program didn't work in Coastal Region.
Table-1 shows the geographic coverage where infrastructure schemes were implemented under SHOUHARDO program (I, II, III).

Table-1: SHOUHARDO program (I, II, III) infrastructure coverage

Coverage	Char	Haor	Coastal	Total	Name of District
SHOUHARDO I					
Rural Coverage					
No. of District	11	4	3	18	**Char:** Bogra, Gaibandha, Jamalpur, Kurigram, Lalmonirhat, Nilphamari, Pabna, Rangpur, Sherpur, Sirajganj and Tangail **Haor:** Habiganj, Kishoreganj, Netrakona and Sunamganj **Coastal:** Chittagong, Cox's Bazar and Noakhali
No. of Upazila	49	33	21	103	
No. of Village	825	630	526	1,981	
Urban Coverage					
No. of District	9	3	2	14	**Char:** Gaibandha PS, Jamalpur PS, Kurigram PS, Lalmonirhat PS, Saidpur PS, Ishwardi PS, Pabna PS, Rangpur PS, Sirajganj PS, Tangail PS **Haor:** Bhairab PS, Durgapur PS, Mohongonj PS, Netrakona PS, Sunamganj PS **Coastal:** Chittagong City Corporation, Cox's Bazar PS
No. of City Corporation / Pourashava	10	5	2	17	
No. of Slum	70	39	28	137	
SHOUHARDO II					
Coverage	**Char**	**Haor**	**Coastal**	**Total**	**Name of District**
No. of District	9	1	1	11	**Char:** Bogra, Dinajpur, Jamalpur, Kurigram, Pabna, Mymensingh, Nilphamari, Rangpur and Sirajganj **Haor:** Sunamganj **Coastal:** Cox's Bazar
No. of Upazila	26	3	2	31	
No. of Village	775	78	59	912	
SHOUHARDO III					
Coverage	**Char**	**Haor**		**Total**	**Name of District**
No. of District	4	4		8	**Char:** Gaibandha, Jamalpur, Kurigram and Sirajganj **Haor:** Habiganj, Kishoreganj, Netrakona and Sunamganj
No. of Upazila	12	11		23	
No. of Village	419	225		644	

Infrastructures types implemented under SHOUHARDO I, SHOUHARDO II and SHOUHARDO III programs were tied to the objectives of the program. Table 2 provides the summary of type of Infrastructure schemes implemented under SHOUHARDO III, SHOUHARDO II and SHOUHARDO I programs:

Table 2: SHOUHARDO (I, II, III) Program Infrastructure Type

Sl#	Types of Infrastructure	# of Infrastructure				Coverage (Village / Slum)		
		SHOUHARDO III	SHOUHARDO II	SHOUHARDO I	Total	SHOUHARDO III	SHOUHARDO II	SHOUHARDO I
1	Community Ground Raising	4	63	544	611	4	62	434
2	Homestead Plinth Raising	2,425	2,016	8,788	13,229	228	160	721
3	Road Improvement / Maintenance (Earthen Road/BFS/HBB/RCC/CC)	9	111	504	624	9	78	343
4	Submersible Road Construction			4	4			4
5	Household Latrine Installation	2,210	4,156	6,385	12,751	448	278	270
6	Community Latrine, Latrine Complex, Bath Room		15	398	413		15	233
7	Drainage Structure (Bamboo bridge, Box Culvert, Pipe Culvert, U-Drain, Drain, RCC Slab over Drain)	90	142	310	542	79	110	192
8	School cum Flood Shelter	14	31		45	14	31	
9	Mound Extension and Mound Protection Wall	8	11	133	152	8	11	127
10	Community Resource Center Development	299	86	212	597	299	86	192
11	Cyclone Shelter Maintenance		16	56	72		15	54
12	School/Institution maintenance / Renovation		143	140	283		139	127
13	Improvement of Rural Market / Market Development		4	68	72		4	66
14	Tube-well Installation		263	1,798	2,061		195	893

Sl#	Types of Infrastructure	# of Infrastructure				Coverage (Village / Slum)		
		SHOUHARDO III	SHOUHARDO II	SHOUHARDO I	Total	SHOUHARDO III	SHOUHARDO II	SHOUHARDO I
15	Tube-well Maintenance / Platforms Construction		3,165	4,133	7,298		405	734
16	Dug Well			44	44			43
17	Dustbin			55	55			36
18	Pathway (Footpath, Footpath with Drain, Pathway)			96	96			54
19	UP Complex Construction			21	21			21
20	Other Types of Structures (Canal/Pond Re-excavation, stair, Guide Wall, Entrance Gate, Ghat Development, IGA Production Center, Pipe Water Supply, Ram, Retaining Wall, Slope Protection etc.)		12	143	155		8	122
	TOTAL	**5,059**	**10,234**	**23,832**	**39,125**			

For more information, please contact:

SHOUHARDO III Program
CARE Bangladesh
RAOWA Complex (Level-7)
VIP Road, Mohakhali, Dhaka-1206, Bangladesh
Phone: +880-2-55058377-83