Government of the People's Republic of Bangladesh Local Government Engineering Department (LGED) Multipurpose Disaster Shelter Project (MDSP)

Consultancy Services for Monitoring & Evaluation of Project





Volume I: Main Report







To The Chief Engineer, Local Government and Engineering Department, Government of Bangladesh, Dhaka.

Date : 14.10.2017 Our Ref : MDSP-M&E/Baseline/ 19 Dealt by : M&E Consultants Team Subject : Submission of Baseline Survey Report of MDSP.

Dear Sir,

In accordance with the contract requirement, we have the pleasure to submit herewith the 'Baseline Survey Report of MDSP' in two volumes for favor of your kind perusal.

The Baseline Survey is an early element in the monitoring and evaluation plan that uses the result framework structure to systematically assess project performance. It provides the basis for subsequent assessment of how efficiently the project activity is being implemented and the eventual results achieved. The project's monitoring and evaluation plan is closely linked to PDO.

Through this survey, the baseline information of key project indicators of MDSP has been developed for tracking project inputs, outputs and outcomes. The baseline findings will be compared to the results of mid-term and end of project survey to determine changes on selected impact indicators listed in the result framework.

The M&E Consultants of MDSP hired an experienced social survey firm: 'Bangladesh Institute of Social Research (BISR)' to undertake the field survey, make data analysis and prepare the 'Baseline Survey Report' of MDSP under the guidance and supervision of the M&E Consultant. The field survey had been taken up with effect from 11 May 2017.

Thanks and regards.

Sincerely yours,

A.H.M.Mahbubur Rahman, Team Leader, M&E Consultants, MDSP, LGED.

Encl.:- Baseline Survey Report of MDSP- 2017.

- Volume I: Main Report.
- Volume II: Annexes



Copy of the 'Baseline Survey Report of MDSP- 2017' is forwarded for kind perusal to:

1.	The Project Director, MDSP, LGED, Dhaka	1 сору
2.	The Deputy Project Director, MDSP, LGED, Dhaka	1 сору
3.	The Team Leader, D&S Consultants, MDSP, LGED, Dhaka	1 сору
4.	Executive Engineer, LGED, Pirojpur district	1 сору
5.	Executive Engineer, LGED, Barisal district	1 сору
6.	Executive Engineer, LGED, Bhola district	1 сору
7.	Executive Engineer, LGED, Patuakhali district	1 сору
8.	Executive Engineer, LGED, Feni district	1 сору
9.	Executive Engineer, LGED, Lakshmipur district	1 сору
10.	Executive Engineer, LGED, Chittagong district	1 сору
11.	Executive Engineer, LGED, Cox's bazar district	1 сору
12.	Executive Engineer, LGED, Noakhali district	1 сору
13.	Anna C. O'Donnell, TTL, MDSP, WB, Dhaka	1 сору
14.	Ms. Swarna Kazi, Co-TTL, MDSP, WB, Dhaka.	1 copy

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Abbreviations

BDT	Bangladeshi Taka, the currecny		
BISR	Bangladesh Institute of Social Research		
DPDS	DS Development Project Design and Services Limited		
ECRRP	Emergency 2007 Cyclone Recovery and Restoration Project		
FGD	Focus Group Discussion		
FI	Field Investigator		
FS	Field Supervisor		
HBB	Herring-Bone-Bond		
HHS	Household Survey		
IDA	International Development Association		
KII Key Informant Interview			
LGED	Local Government Engineering Department		
M&E	Monitoring and Evaluation		
MDSP	Multipurpose Disaster Shelter Project		
MOLGRD&C	Ministry of Local Government Rural Development and Cooperatives		
NGO	Non-Governmental Organization		
PDO Project Development Objective			
SC Study Coordinator			
SDG	Sustainable Development Goal		
SPSS	Statistical Package for the Social Sciences		
UZ	Upazila		

Definition of Terms

Poverty	Minimum income level below which a person is officially considered to lack adequate subsistene
level	and to beliving in poverty in known as poverty level.
Upper	Which measures the income level at which the household would buy minimum requirements,
poverty	2,100 Calories of food.
level	
Lower	Which measures the expenditure level at which the household could just buy enough food, but
poverty	would not have any money left over to buy anything else. It is alarming poor zone.
level	
Vulnerabi	The quality or state of being exposed to the possibility of being attacked or harmed, physically
lity	or emotionally.

Executive Summary

The Multipurpose Disaster Shelter Project (MDSP) is designed to address part of the prevailing needs of multipurpose disaster shelters in nine coastal districts.Local Government Engineering Department (LGED) is implementing the project with a view to providing increased protection to the vulnerable population and livestock.s.The project is expected to have an impact on long-term disaster resiliency in coastal region of Bangladesh.

The Project Development Objective (PDO) of MDSPwill be achieved through (a) construction of around 552 new shelters; (b) rehabilitation of around 450 existing shelters; and (c) construction and improvement of around 550 kilometersof rural roads to improve access and communication networks to shelters.

The objectives of baseline study of MDSP is to provide an information base against which to monitor and assess project activity progress and effectiveness during implementation and after completion. The baseline provides data upon which projects' progress on generation of outputs, contribution to outcome will be assessed.

The study used both quantitative and qualitative data collection tools for gathering pertinent information from local people, local administration, LGED officials, local schoolteacher, students and school management committee. Survey tools like Household Survey (HHS), Key Informant Interview (KII) and Focus Group Discussion (FGD) were used for primary and secondary data collection. A random sample size of 860 HHShas been considered in project area and 233 HHS for control area. Among the project area HH sample, 497 HH samples was selected from the new shelter and access road areas, and 363 HH samples was selected from the rehabilitation areas. For qualitative data collection, 52 KIIs and 13 FGDs were conducted in selected coastal districts.

Quantitative data was analysed by using SPSS and MS Excel.

Issue	New shelter Area	Existing shelter Area	Control Area		
Socio-Economic Condition of the Community					
Population in	22,931,200		-		
MDSP UZs in 09					
districts					
Household size	6	7	6		
Household head	Male: 98%	Male: 97%	Male: 98%		
	Female: 2%	Female: 3%	Female: 2%		
Major	Agriculture: 34.5%	Agriculture: 22.6%	Agriculture: 26.6%		
occupation	Small-scale to medium	Small-scale to medium	Small-scale to medium		
	business: 23.1%	business: 14.6%	business: 26.7%		
	Service: 13.3%	Service: 8.9%	Service: 16.9%		
	Day labour: 8.6%	Day labour: 7.3%	Day labour: 10.5%		
House	Own house: 98%	Own house: 95.8%	Own house: 99.2%		
ownership	Not owned : 2%	Not owned : 4.2%	Not owned : 0.8%		
Type of structure	Kancha: 52.7%	Kancha: 53%	Kancha: 68.1%		
	Semi-pucca: 34.1%	Semi-pucca: 35.6%	Semi-pucca: 24.3%		
	Pucca: 12.1%	Pucca: 7.2%	Pucca: 8.6%		
	Others: 32.6%	Others: 8.4%	Others: 8.4%		
HH mean	BDT: 177,663.00	BDT: 194,441.00	BDT: 139,689.00		
income (last 12					
months)					

Summary of Findings of the Baseline Survey

Issue	New shelter Area	Existing shelter Area	Control Area
HH mean	BDT: 167,264.00	BDT:179,695.00	BDT: 135,684.00
expenditure (last			
12 months)			
HH poverty	28.4	46%	28.90%
status			
(Population			
below national			
poverty line)			
Vulnerable	65.26	6 lacs	
population			
needing shelter			
support from			
survey			
Support	37.10) lacs	
presently			
available per			
PAD			
Provision under	12.37	7 lacs	
MDSP per PAD			
Existing Protect	ion Measures against Disas	sters	
Extent of	-	75.2%	-
present Disaster			
shelter centre			
USe Catiofaction on		Catiatia di 11.00/	
satisfaction on	-		-
ovicting chalter		Adoquato facilitias: 28%	
existing sheller		Enhance adequate	
		capacity for people 72 4%	
		Safety: 33.8%	
Shelter of	Cow shed: 46.4%	Cow shed: 30.3%	_
livestock during	Embankment: 35.1%	Embankment: 37.2%	
disaster	Killa: 26%	Killa: 14.9%	
alouotor	House: 24 5%	House: 29.3%	
	Disaster shelter: 11.6%	Disaster shelter: 27.7%	
Risks during	Life risks: 98.3%	Life risks: 94%	Life risks: 98.2%
disasters in	Loss of livestock: 90.3%	Loss of livestock: 83.7%	Loss of livestock:89.5%
absence of	Loss of money: 78%	Loss of money: 66.8%	Loss of money: 83%
multipurpose	Damage of clothes:78.5%	Damage of clothes:67.5%	Damage of clothes:
shelter	Loss of HH assets: 71.5%	Loss of HH assets: 64.2%	81.3%
	Loss of jewellery: 56%	Loss of jewellery:46.6%	Loss of HH
	Damage of educational	Damage of educational	assets: 70.4%
	materials: 51.2%	materials: 55.1%	Loss of jewellery: 63%
	No risks: 39.5%	No risks: 16.6%	Damage of educational
			materials: 79%
			Do not have
			any risks: 48.6%

Issue	New shelter Area	Existing shelter Area	Control Area
Problems faced		Congestion: 79.1%	-
in existing		Broken door: 47.8%	
shelter		Broken window: 53.1%	
		No store room: 71.2%	
		Insufficient toilet: 59.8%	
		No separate toilet for	
		women: 75.1%	
		Unavailability of drinking	
		water: 64.1%	
		Rain water drops enter in	
		No approach road: 22.3%	
Problems faced	-	-No separate toilet:81.4%	-
by women in		No room for child care	
existing shelter		and feeding: 75.2%	
		No facility for caring	
		pregnant women: 73.8%	
Access Road of	Disaster Shelter		
Presence of	Yes= 95.7%	Yes= 97.2%	-
access road	No=4.3%	No= 2.4%	
Types of access	Paved road: 13.8%	Paved road: 21.6%	-
road	HBB road: 27.6%	HBB road: 30.3%	
Le sule Const	Earthen road: 58.5%	Earthen road: 48.1%	
Inundation of	Yes= 90.5%	Yes= 86%	-
Access road	NO= 9.5%	NO= 14%	
uunny uisastei			
Water logging	Yes= 65.8%	Yes= 50.7%	-
problem	No= 34.2%	No= 49.3%	
Imapct of water	Serious damage: 44.5%	Serious damage: 35.2%	-
logging on road	Partial damage: 26.9%	Partial damage: 23.7%	
	Pothole on the road:	Pothole on the road:	
	27.2%	37.1%	
	Others: 6.4%	Others: 8%	
Knowledge of MI	DSP Implementation		
Knowledge	Yes: 27.8%	Yes: 17%	-
about MDSP	No: 72.2%	No: 83%	
Source of	Neighbour: 37.6%	Neighbour: 19.9%	-
knowledge	LGED: 26%	LGED: 19.9%	
	NGUS: 48.8%	NGOS: 32.9%	
	Other courses: 24, 4%	Other courses: 58,4%	
Necessity of	Vac: 07 5%	Vac: 80 1%	_
MDSP	No: 2 5%	No: 10.6%	-
intervention	110. 2.070		
Expectation on	Very good: 57 2%	Very good: 42 7%	-
the quality of	Good: 22.4%	Good: 51.4%	
MDSP access	Moderate: 18.3%	Moderate: 5.9%	
road	Bad: 2.3%		

Conclusions and Recommendations

Community people hope that the new and the rehabilated school cum disaster shelters would be modern enough with all facilities including flood free access road, safe water, lighting, cross air flow, separate toilets for men and women, store room, separate space for sheltering livestock, as well as primary health care facilities etc. This shelter can be used as school as well centr for socio-cultural functions like marriage ceremony, cultural programme, social awareness programme, mass gathering, etc. In addition to that the shelter can be used as community clinic during disaster period.

The following conclusions and recommendations may be made:

1) The study established baseline information for the key perfomance indicators for regular tracking of Project inputs, outputs and outcome. These baselines are also necessary for effective Project Impact Evaluation. These are indicated in the MDSP Monitoring and Evaluation Framework – Matrix of Outcome and Outputs. In the implementation of the project, the attainment of the targets should be given necessary consideration in order to enhance the achievement of the PDO.

2) This early in the program implementation, monitoring and evaluation findings, through this baseline study, have identified concerns and issues that should immediately be addressed. It is recommended that these concerns and issues be carefully considered and corrective measures instituted. If need be to institute changes in strategy reformulation, policy makers and program implementers may consider to do so primarily in the interest of the vulnerable target beneficiaries.

3) It is proposed that, in addition to planning for the infrastructure measures, the importance of properly managing and maintaining what has already been constructed should not be overlooked.

4) Shelter management in order to be effective and workable needs to be planned not only at the LGED and SMC level but should ensure the close participation of the target community. First and foremost is the need for information dissemination and sharing and eventually the participation in planning and implementation for pre-, during and post disaster scenarios. Even if the MDSP interventions provide enhanced facilities as shelters and connecting roads as also logistics support for school functioning, the people at the ground level especially those for whom the facilities have been provided should know the program without which it will have minimal benefit and impact.

5) Availability of disaster warning system was found high both in the newly constructed and old shelter areas. Most people mentioned that they receive warning messages from the mobile phone network, television, radios, etc. Overall, the cyclone shelters appeared as a very effective tool to protect lives and property of the vulnerable people.

6) According to the baseline survey, the total number of vulnerable population needing shelter was estimated at 65.25 lacs. According to PAD, at pre-project stage, there is already scope of providing shelter to 37.10 lacs and MDSP will provide shelter to another 12.37 lac vulnerable people. This indicates that there is still need to construct additional shelters.

7) Emergency medical facilities should be provided for the people taking shelters.

Chapter 1: Introduction

1.1 Background

Over the last two decades, there have been evidences that climate change is influencing the frequency and intensity of natural disasters (e.g., cyclones and storm surges, flooding, prolonged droughts and sea level rise, and heat waves) and the impacts will intensify in the near future¹. The climate change and natural disasters are interlinked and likely to increase the number and scale of disasters with more extreme weather events.

Bangladesh, a low-lying country, comprise of 19 coastal districts (among 12 districts are exposed to the Bay of Bengal and lower estuaries) over a length of 710 km.Recent tropical cyclones data indicates that on an average, a devastating cyclone strikes the country every two to three years, for example, cyclones Sidr (November 2007), Aila (May 2009), Mahasen (May 2013), Komen (July 2015), Roanu (May 2016) and Mora (May 2017).Livelihoods of coastal populations are highly dependent on ecosystems linked to agriculture, fishery, forestry and salt farming and highly vulnerable to natural disasters and sea level rise. Indeed, the coastal people have three sources of livelihood—water, land and forest—all of which get affected by the climatic events².

Natural disasters cannot be prevented, but the damage can be minimized with adequatepreparedness and risk reduction measures. Bangladesh has given the highest priority to risk reductioninitiatives in disaster management efforts and mainstreaming it in all development initiatives of the government. Under IDA assistance, GoB has taken up the Multipurpose Disaster Shelter Project (MDSP) designed to address part of the prevailing needs of multipurpose disaster shelters in nine (9) coastal districts namely: Chittagong, Cox's Bazar, Feni, Lakshimpur, Noakhali, Bhola, Barisal, Pirojpur and Patuakhali.

The Project Development Objective (PDO) of MDSP is to reduce the vulnerability of the coastal population across selected coastal districts to natural disasters. The project will benefit 14 million people among the coastal population living in the front line of climate change. The PDO will be achieved through (a)Construction of around 552 new shelters; (b)Rehabilitation of around 450 existing shelters; and (c)Construction and improvement of around 550 kilometers of rural roads to improve access and communication networks to shelters.

1.2 Project Locations

The MDSP will be implemented in the 73 Upazilas (UZs) of following 9 districts (**Figure 1**). Among them, 14 UZs are in Chittagong district, 8 UZs in Cox's Bazar district, 6 UZs in Feni district, 5 UZs in Lakshmipur district, 9 UZs in Noakhali district, 7 UZs in Bhola district, 9 UZs in Barisal district and 7 UZs in Pirojpur district (**Table1.1**).

Name of District	Name of Upazila			
	Sandwip	Lohagara	Satkania	Patiya
Chittagong	Chandanish	Boalkhali	Banskhali	Sitakundu
(14 UZs)	Raojan	Rangunia	Mirsharai	Hathazari
	Fatikchari	Anowara	-	-
Cox's Bazar	Kutubdia	Cox's Bazar Sadar	Chakoria	Pekua
(8 UZs)	Moheshkhali	Ramu	Ukhiya	Teknaf

Table 1.1: MDSP area coverage	by district and Upazila
-------------------------------	-------------------------

¹Haque MA, Rahman D, Rahman MH (2016). The importance of community based approach to reduce sea level rise vulnerability and enhance resilience capacity in the coastal areas of Bangladesh: a review. *Journal of Sustainability Science and Manage*, 11(2):81-100.

² World Bank (2013).4° turn down the heat: climate extremes, regional impacts, and the case for resilience. The World Bank, Washington, DC.

Name of District		azila		
	Daganbhuiyan	Chhagalniya	Sonagazi	FeniSadar
Feni (6 UZS)	Porshuram	Fulgazi	-	-
Lakshimpur	Komol Nagar	Ramgati	Raipur	LakshimpurSadar
(5 UZs)	Ramgati	-	-	-
Naakhali	Noakhali Sadar	Begumganj	Chatkhil	Companiganj
$(9 17_c)$	Senbagh	Hatiya	Kabirhat	Sonaimuri
(7023)	Suborno Char	-	-	-
Phole (7 LIZe)	Bhola Sadar	Borhanuddin	Char Fasson	Daulatkhan
Biloia (7 OZS)	Lalmohan	Monpura	Tajumuddin	-
Danical (0 17a)	Agailjhara	Babuganj	Bakerganj	Banaripara
Barisai (9 UZS)	Barisal Sadar	Gaurnadi	Hizla	Muladi
	Wazirpur	-	-	-
Pirojpur	Bhandaria	Kaukhali	Mothbaria	Nesarabad
(7 UZs)	Nazirpur	Pirojpur Sadar	Zia Nagar	-
	Galachipa	Dashmina	Kalapara	Mirjaganj
	Patuakhali Sadar	Dumki	Bauphal	Rangabali
Patuakhali				
(8 UZs)				



Figure 1: Map of Bangladesh indicating the MDSP locations.

1.3 Objectives of the Baseline Survey

The first stage in building an evaluation system typically involves design, execution and analysis of the baseline studies in order to establish the frame of reference for subsequent comparisons on which evaluation will be based. Since for these comparative purposes the data to be collected subsequently must be similar to those collected in the baseline studies, the methods of selecting and conducting these baseline studies and their content are extremely important. In effect, the principal conceptual work for the evaluation of a programme must occur at this stage, since the nature of the entire monitoring and evaluation system will be determined here.

The objectives of abaseline study of MDSP are to provide an information base against which to monitor and assess project activity progress and effectiveness during implementation and after completion. The baseline provides data upon which projects' progress on thegeneration of outputs, contribution to outcomes is assessed.

A synopsis of the proposed baseline survey was earlier shared with all stakeholders on 20 April, 2017.

DPDS, the M&E Consulting firm hired 'Bangladesh Institute of Social Reasearch (BISR)' to conduct field surveys and to prepare the 'Baseline Survey Report' for MDSP. The survey commenced in May 2017 under the direct supervision and guidance of the M&E Consultant and with support from the PMU, PIUs in the field, D&S Consultants and other related stakeholder.

The Baseline Report covers the following:

- (a) Existing socio-economic status of and living conditions of the communities before start of project work to assess the disaster vulnerability scenario;
- (b) The general perception of the beneficiaries in respect of the needs and benefits of shelters, access roads, and schools; and
- (c) Level of awareness among target groups about MDSP interventions at the household level.

Chapter 2: Study Methodology

2.1 Approach and Methodology of the Baseline Study

The survey firm used both quantitative and qualitative data collection tools for gathering pertinent information from local people, local administration, LGED officials, local school teacher and school management committee etc. Studies and reviews of background documents and pertinent literature will be done. The team will work under the supervision and guidance of the M&E Consultant. Detailed methodology of the baseline study is given below:

Approach: The baseline study has taken care of a pre-post method of assessment, i.e., to identify the possible changes that are likely to occur due to implementation of the project. For comparison with the treatment area, survey will also be conducted at the control area outside project catchment area. The outcome of the survey will describe the 'before' project situation.

Datacollection tools were developed by BISR. Thestudy was done following the processes of survey design and planning, finalization of data collection tools, training and orientation, field visit, data collection, data entry, editing and analysis, and report writing. Details methodologies of the baseline study are given below:

2.2 Secondary Data collection

Secondary data has been collected from different sources including government documents, official statistics, technical reports, NGOs and research organizations. Relevant books and scholarly journals have been used to collect necessary secondary data for the study. The objective of secondary data collection was to review the status of existing disasters shelters, multipurpose disaster shelters, disaster management, government and NGOs role and responsibilities in disaster management, disaster vulnerability and risk reduction issues, etc. Review and analysis of secondary data enabled a cost-effective way of gaining a broad understanding of baseline study. Secondary data also helped verify the consistency of primary data.

2.3 Primary Data Collection Methods

2.3.1 Study population

The target group of the baseline survey was the local people, local administration, LGED officials, local school teacher, students and school management committee in the following 9 coastal districts Chittagong, Cox's Bazar, Feni, Lakshimpur, Noakhali, Bhola, Barisal, Pirojpur and Patuakhali.

2.3.2 Sample design

For the baseline study, both quantitative and qualitative tools were selected for data collection from the targeted respondents. A participatory approach was adopted as far as practicable. The general survey tools like Household Survey (HHS), Key Informant Interview (KII) and Focus Group Discussion (FGD) were used for primary data collection. The baseline survey process was supplemented by secondary data on socio-economic profile and environmental, institutional and production profiles in selected areas.

2.3.3 Development of data collection tools

For quantitative field data collection, two types of semi-structured questionnaires were used: One set questionnaire was used for interviewing the MDSP target group in project area (Annex 1) and the other set of questionnaire was used for interviewing people in control area (Annex 2). Data collection tools were developed jointly by the M&E Consultant and BISR. Annex 3 shows the details of the household surveys in treatment and control areas.

For qualitative data collection, a KII checklist was developed for interviewing the Key Informants such as UZ Engineer/RFE (Resident Field Engineer), UZ Livestock Officer, UZ Education Officer, NGO representative, Union Parishad (UP) Chairman/Ward Councillor/Women Member, Head Teacher of Primary School/SMC members, etc.(Annex 4). Annex 5 shows the findings from the conducted KIIs.

For conducting FGD, a guideline was developed to discuss with the vulnerable community people, community leader, owner of livestock, women UP member, school teacher, guardian of students, students of the class IV and V, religious leaders, etc. Both male and female equally participated in each FGD. The details of FGD survey has been incorporated in **Annex 6**.

A pictorial view of the baseline survey exercise has been given in Annex 7.

2.3.4 Selection of the sampling community

In selecting the random sampling for HH survey, it is necessary to ensure inclusion of all categories of people that adequately cover the requirements of the survey objectives. Since the project deals with multi-purpose, multi-dimensional infrastructures, a purposive sampling method was followed as per requirement. The sampling was made covering the three types of project interventions: (i) new shelter; (ii) rehabilitated shelter; and (iii) access road.

2.3.5 Sample size for the baseline survey

By using widely used statistical formula, it has been calculated thatanhousehold sample size of 600 was sufficient to generate the representative and statistically significant level of findings on development indicators. However, on the basis of some conceptual idea in a book "Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies"³, the random HH survey samplings was selected taking into account the following:

- i) Geographic outreach of selected interventions;
- ii) Population of HH within intervention catchment area;

85

iii) HH with relatively weak structure

Total

iv) Houses situated in open area/ low lying area/ on river bank/ close to sea

Total no. of interventions	Intervention area	Sample Size for HHs		Sample Size for KII	Sample Size for FGD
		Project	Control	(Nos.)	(Nos.)
		area	area		
New shelters: 552 nos.	50	500	220	50	10
Access road: 550 km.					
Rehabilitation: 450 nos.	35	350			

850

220

50

Table 2.1: Planned sample size distribution according to project interventions

Covering 85 overlapped intervention upazillas, a random sample size of 850 (10 HH from each intervention UZ) had been considered for project area and total 220 for control area.For qualitative data collection, 50 KIIs and 10 FGDs were planned to be conducted in 9 selected coastal districts. This is shownin **Table 2.1**.

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³Birkmann J (ed.) (2006). *Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies*. United Nations University Press, Tokyo.

In reality, 860 HH samples (497+363) in project area and 233 HH samples in control area were actually done as shown in **Table 2.2.**

Name of district	Number of Upazilas under MDSP	No. of Upazila covered for new shelter	No. of HH respondents innew shelter area	No. of Upazila covered for existing shelter	No. of HH respondents in existing shelter area	No. of HH responden ts in control area
Chittagong	14	10	100	9	90	58
Cox's Bazar	8	6	60	7	71	53
Feni	6	4	40	2	37	12
Lakshimpur	5	3	30	3	10	6
Noakhali	9	6	57	8	86	16
Bhola	7	5	48	6	69	14
Barisal	9	6	60	-	-	25
Pirojpur	7	5	52	-	-	25
Patuakhali	8	5	50	-	-	24
Total	73	50	497	35	363	233

Table 2.2: Actual District wise sample size distribution of the household survey

2.3.6 Recruitment, orientation and training of Field Investigators

BISR recruited 26 male 'Field Investigators (FIs)' for field data collection within the defined timeframe. Qualifications of the FIs was at least having bachelor degree, more than five years of working experience in data collection of similar project.

BISR organized a 2-day (11 and 13thMay, 2017) tailored and in-depth training programme for the 30 FIs that included in-house orientation of techniques of data collection and fill-in the questionnaires; repeated practice sessions by group discussions after or before a session break, and written and mock tests for the selection of top 26 FIs for datacollection. Another two persons were appointed as 'Field Supervisor (FS)' for monitoring and reporting the field works. Both M&E Consultant team and BISR team members ran the training sessions where Study Coordinator (SC) guided and monitored the 2-day training sessions. Bangla translated data collection tools were used in the training sessions.

2.3.7 Field data collection

HH survey from project area: Since the survey covered catchment areas of project infrastructure, 10 HHswas interviewed from within influence area of each shelter and road location. The catchment area of each shelter was considered as 1.5 sq. km. The respondents were selected along two directions from the centre of the infrastructure where in each direction 5 samples were collected @ 2 samples for first half km; 2 samples for second half km, and 1 sample on the third half km.

A total of 860 HH samples from project areas were interviewed for the study. Among them, 497 samples were interviewed from 50 new shelter areas and 363 from 35 rehabilitation shelter areas (**Table 2.2**).

HH survey from control Area: The control areas were beyond the influence of MDSP interventions. It was selected in same or adjacent Upazilas. It was selected in consultation with project stakeholders primarily meeting the following two criteria: (i) disaster prone as of project area; and (ii) similar sociocultural and geographic situation as of project area. A total of 220 HH samples were interviewed from the control areas (**Table 2.2**).

Klls: A total of 52 Klls were conducted with the selected respondents such as UZ Engineer/FRE (Field Resident Engineer), UZ Livestock Officer, UZ Education Officer, NGO representative, Union

Parishad (UP) Chairman/Ward Councillor/Women Member, Head Teacher of Primary School/SMC members, etc.

12 KIIs were conducted in Chittagong district, 6 KIIs in Cox's Bazar district, 5 KIIs in Feni district, 5 KIIs in Noakhali district, 4 KIIs in Lakshmipur district, 5 KIIs in Barisal district, 5 KIIs in Patuakhali district, 5 KIIs in Pirojpur district, and 5 KIIs in Bhola district (**Table 2.3**).

The respondents were requested to provide information on existing network of shelters and access roads, catchment area population, O&M issues, communication network including bridges and culverts to the multipurpose disaster shelters and its O&M issues, catchment population of students in the existing schools, institutional, social and tribal issues, financial aspects, economic aspects, long term sustainability, assessment of secondary impact on economic activity and environmental aspects.

Name of District	Number of FGD conducted	Number of KII conducted
Chittagong	3	12
Cox's Bazar	I	6
Feni	I	5
Lakshimpur	I	5
Noakhali	l	4
Bhola	2	5
Barisal	2	5
Pirojpur	l	5
Patuakhali		5
Total:	13	52

Table 2.3: Sample size for qualitative data collection for the baseline survey

FGDs: A total of 13 FGDs were conducted for the baseline survey with the male and female vulnerable community people, community leader, owner of livestock, women UP member, school teacher, guardian of students, students of the class IV and V, religious leaders, etc.

3 FGDs were conducted in Chittagong district, 1 in Cox's Bazar district, 1 FGD in Feni district, 1 FGD in Noakhali district, 1 FGD in Lakshmipur district, 2 FGDs in Bhola district, 2 FGDs in Barisal district, 1 FGD in Pirojpur district, and 1 FGD in Patuakhali district (**Table 2.3**).

Information was collected on the status of existing and needs of new shelters and access roads, catchment area population, O&M issues, communication network including bridges and culverts to the multipurpose disaster shelters, population of students in the existing schools, institutional, social and tribal issues, financial aspects, economic aspects, long term sustainability, assessment of secondary impact on socioeconomic activity and environmental aspects.

2.4 Field Monitoring and Supervision

The field teams were guided and managed by Study Coordinator supported by two Field Supervisers. Each field team was guided and managed by a Supervisor who reported to the SC on a day-to-day basis about the progress of data collection. On the other hand, SC was maintained contact with the M&E Consultant team to report on a day-to-day basis on the progress of data collection. The Supervisors were responsible for ensuring supervision and management of each team at the field level by assigning and taking stock of team's daily works and maintained contact with the SC as well as coordinated with the local MDSP staffs. The Supervisors ensured quality control checks through random checking of the filled-in questionnaires.

2.5 Quality Control

For ensuring thequality of collected data, SCand FSs of BISR thoroughly checked the all filled-up questionnaires before making data entry in SPSS (Statistical Package for the Social Sciences). Data editing and checking was done to ensure that the information provided was accurate, complete and consistent.

2.6 Data Processing and Consolidation

Every filled-in questionnaire was thoroughly edited and checked before data entry in SPSS. Data processing work consisted of registration of all completed questionnaires, editing, crosschecking, coding, data entry and cleaning of data. The statistician was overseeing the data processing activities.

□ *Registration of documents:* There was a registration section in BISR office and the main responsibility of this section was to keep track of the filled-up questionnaires and maintained the field tour plan/schedules.

□ **Data editing**: The information collected during fieldwork was 100% scrutinized of each FI's interview schedule to check the quality of raw data including cross-check. It was a process of examination to detected errors, omitted of any and to correct these wherever possible and in few cases. The SC and Supervisors were involved in editing the collected data.

□ *Coding:* The Statistician was developed an individual coding manual for the individual set of questionnaire.

□ **Data entry:** Before the data entry, a data entry programme was developed in SPSS software (version 20) by the Statistician.A 'Data Entry Operator' under the supervision of Statistician conducted data entry work. Before data entry, the 'Data Entry Operator' received training by Statistician on the developed programme in SPSS.

□ **Data cleaning:** Data cleaning is an important task during which the data usually inspected, and erroneous data can be corrected. The Statistician did the data cleaning work before data analysis.

2.7 Data Analysis and Report Writing

For the present baseline study, quantitative data were analysed using SPSS and in MS Excel. Frequency tables like bi-variate and multivariate were prepared for interpretation of the data. MS Excel used for preparing graphs from the quantitative data.

Qualitative data consist of observations, not numbers. Interview transcripts, field notes and observations provided a descriptive account and explanation of the study. A qualitative research has no system for pre-coding, therefore, the researcher gathered the similar type of data from the similar type of interview and summarized the field findings before itsuses for report writing. For the study, qualitative data were analysed in light of the study objectives by following three data interpretation techniques like content analysis⁴, narrative analysis⁵ and discourse analysis⁶.

After data analysis, a report has been prepared based on the results of the quantitative and qualitative findings. Tables and graphs have been used in the report representing the survey findings.

⁴Content refers to the meaning of the information.**Content analysis** is a qualitative research technique for systematically describing written, spoken or visual communication.

⁵Narrative analysis: A form of qualitative analysis in which the analyst focuses on how respondents impose order on the flow of experience in their lives and thus make sense of events and actions in which they have participated.

⁶Discourse analysis is defined as the analyses of language 'beyond the sentence' like analyze written, vocal, sign language use, or any significant semiotic event.

Chapter 3: Findings on Socio-Economic Condition of the Community

3.1 Sex and Age Group of the Respondnets

Key socio-economic issues which influence the disaster vulnerability have been chosen for the study. These are population and household size, literacy and education, occupation, income expenditure and poverty, house structure and level, ownership of the house and household assets especially livestock. These issues have therefore been studied with primary data and information collected through household survey and secondary data and information collected through literature review.

Among the sex of the respondents, male respondents were predominant in three locations. 89.6% were male were interviewed in the new shelter area, 92.3% male were interviewed in the existing shelter area, and 91.1% male were interviewed in the control area (**Table 3.1**).

Name of District	New sh	elter (%)	Existing	shelter (%)	Control area (%)		
	Male	Female	Male	Female	Male	Female	
Chittagong	84.0	16.0	83.3	16.7	84.5	15.5	
Cox's Bazar	98.3	1.7	91.5	8.5	100.0	-	
Feni	87.5	12.5	97.5	2.5	100.0	-	
Lakshmipur	93.3	6.7	100.0	-	100.0	-	
Noakhali	100.0	-	98.7	1.2	93.8	6.7	
Bhola	81.3	18.8	82.6	17.4	85.7	14.3	
Barisal	93.3	6.7	-	-	84.0	16.0	
Pirojpur	84.6	15.4	-	-	80.0	20.0	
Patuakhali	84.0	16.0	-	-	91.7	8.3	
Average	89.6	10.4	92.3	7.7	91.1	8.9	

Table 3.1: Sex of the surveyed respondent

Source: Field survey

Table 3.2 shows the age group of the surveyed respondents. In the new shelter area, data revealed that maximum numbers of respondents fell under the age group 31-40 years (24.3%) followed by 41-50 years (23.7%), 18-30 years (20.5%). In the existing shelter area, maximum numbers of respondents fell under the age group 31-40 years (26.7%) followed by 41-50 years (25.1%) and 18-30 years (19.3%) which was similar to the new shelter area. In the control area, maximum numbers of respondents fell under the age group 18-30 years (26.6%) followed by 31-40 years (25.3%) and 41-50 years (20.6%) (**Table 3.2**).

Table 3.2: Age group distribution of the surveyed responde	nt

Name of District	Age group	New shelter area (%)	Existing shelter area (%)	Control area (%)
Chittagong	18-30	19.0	22.2	27.6
	31-40	25.0	27.8	19.0
	41-50	22.0	24.4	19.0
	51-60	15.0	16.7	20.7
	60+	19.0	8.9	13.8
Cox's Bazar	18-30	31.7	31.0	37.7
	31-40	13.3	29.6	22.6
	41-50	26.7	15.5	17.0
	51-60	16.7	16.9	17.0
	60+	.7	7.0	5.7
Feni	18-30	20.0	12.5	25.0
	31-40	22.5	20.0	25.0

Name of District	Age group	New shelter area (%)	Existing shelter area (%)	Control area (%)
	41-50	35.0	25.0	8.3
	51-60	7.5	20.0	16.7
	60+	15.0	22.5	25.0
Lakshmipur	18-30	13.3	30.0	33.3
	31-40	40.0	20.0	16.7
	41-50	13.3	-	33.3
	51-60	23.3	30.0	-
	60+	10.0	20.0	16.7
Noakhali	18-30	8.8	8.4	31.3
	31-40	17.5	25.3	12.5
	41-50	29.8	39.8	31.3
	51-60	24.6	16.9	25.0
	60+	19.3	9.6	-
Bhola	18-30	16.7	18.8	42.9
	31-40	25.0	29.0	21.4
	41-50	33.3	21.7	28.6
	51-60	14.6	21.7	7.1
	60+	10.4	8.7	-
Barisal	18-30	23.3	-	20.0
	31-40	36.7	-	40.0
	41-50	15.0	-	20.0
	51-60	11.7	-	8.0
	60+	13.3	-	12.0
Pirojpur	18-30	26.9	-	8.0
	31-40	21.2	-	20.0
	41-50	19.2	-	36.0
	51-60	17.3	-	24.0
	60+	15.4	-	12.0
Patuakhali	18-30	22.0	-	12.5
	31-40	24.0	-	50.0
	41-50	20.0	-	8.3
	51-60	18.0	-	20.8
	60+	16.0		8.3
Average	18-30	20.5	19.3	26.6
	31-40	24.3	26.7	25.3
	41-50	23.7	25.1	20.6
	51-60	16.3	18.5	17.6
	60+	15.1	10.5	9.9

Source: Field survey

3.2 Population in the MDSP Areas

District wise total population of Project Upazilas, project UZ area are shown in **Table 3.3**.This table shows highest targeted population is in Chittagong (7,616,352) followed by Noakhali (3,108,083), Barisal (2,324,310), Cox's Bazar (2,289,990), Bhola (1,776,795), Lakshmipur (1,729,188), Patuakahli (1,535,854), Feni (1,437,371) and Pirojpur (1,113,257) respectively.

Table 3.3: District wise population	distribution in the MDSP	intervention Upazilas
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Division	District (No. of project Upazila)	Total population of MDSP project Upazilas ¹	Area (Sq. km.)	HH poverty status in percent (Population below national poverty line) ²	
	Chittagong (14)	7,616,352	5,282.98		
Chittagong	Cox's Bazar (8)	2,289,990	2,491.86	20.97	
	Feni (6)	1,437,371	982.34		

	Lakshmipur (5)	1,729,188	1,455.96	
	Noakhali (9)	3,108,083	3,600.99	
	Bhola (7)	1,776,795	3,737.21	
	Barisal (9)	2,324,310	2,790.51	25.95
Barisal	Pirojpur (7)	1,113,257	1,307.61	55.75
	Patuakhali (8)	1,535,854	3,220.15	
		22,931,200	24,869.61	28.46 (Av.)

Note: 1: Population and HousingCensus (2011) by BBS;

2. Food intake or direct calorie intake is used as the yardstick to measure poverty. Based on poverty status of the surveyed households according to Cost of Basic Needs (CBN) method followed by BBS in HIES 2010 (see Table 3.16).

3.3 Household Member, Household Head and Household Size

District wise household size with gender disaggregated members and percentage of the male and female household head in the projectand control areas are shown in **Table 3.4.** The table shows a reasonably balanced distribution of male and female household members in both the project and control areas. Average number of male member per household was found 3 in the new shelter area, 4 in the existing shelter ares and 3 in the control area. Average number of female member per household was found 3 in new shelter, existing shelter and control area respectively. In total, on aerage there were 6 members per household in the new shelter area, 7 members per household in the existing shelter area, and 6 members per household in the control area.

In case of percentage of male and female household head in the new shelter area was found male 98% and female 2%. Similarly, in the existing shelter area household, 97% household head was male and rest 3% was female. In case of contraol area household, 88% household head was male followed by female by 2%.

In comparison with the national average household size of 5 (BBS Population and Housing Census 2011), new shelter area average household size was found 6, existing shelter area average household size was found 7, and in the control area average household size was found 6 (**Table 3.5**).

Name of District	Aver memb	age no. of er per hou	male ısehold	Avera memb	age no. of er per ho	female usehold	le Average member per old household		Percentage of male and female household head						
	Projec	ct area	Control	Proje	ct area	Control	Proje	ct area	Control		Male		Female		
			area			area			area	Proje	ct area	Control	Proje	ect area	Control
	New	Existing		New	Existing		New	Existing		New	Existing	area	New	Existing	area
	shelter	shelter		shelter	shelter		shelter	shelter		shelter	shelter		shelter	shelter	
Chittagong	3	3	4	3	3	3	7	6	7	97	97	99	3	3	5
Cox's Bazar	4	4	4	3	4	3	7	8	7	100	97	100	-	3	-
Feni	4	3	4	3	3	3	7	6	7	100	98	100	-	3	-
Lakshmipur	3	4	2	3	4	3	6	7	5	100	100	100	-	-	-
Noakhali	4	4	3	4	3	3	7	7	6	100	99	94	-	I	6
Bhola	3	3	3	4	3	3	7	6	6	94	90	100	6	10	-
Barisal	3	-	3	3	-	2	6	-	6	100	-	96	-	-	4
Pirojpur	3	-	2	2	-	2	5	-	5	100	-	100	-	-	-
Patuakhali	3	-	3	3	-	3	6	-	5	92	-	96	8	-	4
Average	3	4	3	3	3	3	6	7	6	98	97	98	2	3	2

Table 3.4: Household size with gender disaggregated members and type of household head

Source: Field survey

District	National household size (avg.)	Surveyed household size (avg.) in new shelter area	Surveyed household size (avg.) in existing shelter area	Surveyed household size (avg.) in control area
Chittagong	5	7	6	7
Cox's Bazar	6	7	8	7
Feni	5	7	6	7
Lakshmipur	5	6	7	5
Noakhali	5	7	7	6
Bhola	5	7	6	6
Barisal	5	6	-	6
Pirojpur	4	5	-	5
Patuakhali	4	6	-	5
Average	5	6	7	6

Table 3.5: Average surveyed household size in compared with the national survey

In the existing shelter area settlements were more congencial where they lived under a big kinship system. Likewise, higher expected number of childen may be another cause of bigger household size in the surveyed project and control areas which mainly was for demand for labour for high risk fishing, keeping control over the unauthorized occupany over land, rearing large number of cattles and using tradition method of land cultivation. All these were mainly for unique nature of organization of production in the coastal area. However, more members in the household may require meeting therisk of loss of life and injuries during a disaster. This social issue is, therefore, to be addressed under disaster management programme.

3.4 Education and Literacy of the Respondents

In the case of educational qualification of the head of household head, it was found that highest number of household head completed secondary education (28.1%) followed by completed primary education (25.9%) in the new shelter area. Here, 14.6% head were illiterate (14.6%) and 13.2% can only sign their name. In the existing shelter area, highest number of household head completed secondary education (29.6%) followed by completed primary education (24.8%). Here, 14.5% head were illiterate and 13.3% head can only sign their name. On the other hand, in the control area, highest number of household head completed secondary education (29%) followed by completed primary education (24.7%). Here, 17.8% household head completed their graduation (**Table 3.6**).

Name of District	Education level	New shelter area (%)	Existing shelter area (%)	Control area (%)
Chittagong	Illiterate	7.0	14.4	6.9
	Can only sign	15.0	15.6	17.2
	Primary	22.0	21.1	17.2
	Secondary	31.0	30.0	36.2
	Higher Secondary	10.0	10.0	17.2
	Graduation	15.0	8.9	5.2
Cox's Bazar	Illiterate	20.0	21.1	18.9
	Can only sign	18.3	.3	15.1
	Primary	35.0	28.2	41.5
	Secondary	21.7	23.9	18.9
	Higher Secondary	3.3	8.5	-
	Graduation	1.7	7.0	5.7
Feni	Illiterate	20.0	5.0	16.7
	Can only sign	5.0	22.5	-
	Primary	20.0	25.0	16.7
	Secondary	30.0	27.5	66.7
	Higher Secondary	10.0	7.5	-
	Graduation	15.0	12.5	-
Lakshmipur	Illiterate	30.0	30.0	-
	Can only sign	3.3	10.0	-
	Primary	20.0	20.0	-
	Secondary	30.0	30.0	16.7
	Higher Secondary	3.3	10.0	16.7
	Graduation	13.3	-	66.7
Noakhali	Illiterate	8.8	10.8	-
	Can only sign	17.5	6.0	25.0
	Primary	24.6	32.5	31.3
	Secondary	42.1	30.1	25.0
	Higher Secondary	5.3	8.4	6.3
	Graduation	1.8	12.0	12.5
Bhola	Illiterate	14.6	5.8	-
	Can only sign	-	14.5	-
	Primary	27.1	21.7	14.3
	Secondary	27.1	36.2	28.6

Table 3.6:	Educational	qualification	of the	household	head
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Name of District	Education level	New shelter area (%)	Existing shelter area (%)	Control area (%)
	Higher Secondary	12.5	10.1	7.1
	Graduation	18.8	11.6	50.0
Barisal	Illiterate	11.7	-	12.0
	Can only sign	23.3	-	12.0
	Primary	21.7	-	32.0
	Secondary	31.7	-	28.0
	Higher Secondary	8.3	-	8.0
	Graduation	3.4	-	8.0
Pirojpur	Illiterate	17.3	-	4.0
	Can only sign	-	-	36.0
	Primary	28.8	-	44.0
	Secondary	25.0	-	8.0
	Higher Secondary	17.3	-	4.0
	Graduation	11.5	-	4.0
Patuakhali	Illiterate	2.0	-	-
	Can only sign	36.0	-	25.0
	Primary	34.0	-	25.0
	Secondary	14.0	-	33.3
	Higher Secondary	4.0	-	8.3
	Graduation	10.0	-	8.3
Average	Illiterate	14.6	14.5	6.5
	Can only sign	13.2	13.3	14.5
	Primary	25.9	24.8	24.7
	Secondary	28.1	29.6	29.0
	Higher Secondary	8.2	9.1	7.5
	Graduation	10.1	8.7	17.8

Source: Field survey

3.5 Household Occupation

The percentage of household head engaged inthedifferent occupation. Agriculture is the major occupation in new shelter (34.5%), existing shelter (22.6%) and control areas (26.6%) areas.Small-scale to medium business is the second most occupation in new shelter (23.1%), existing shelter (14.6%) and control areas (26.7%) respectively. Service in government, NGOs and others private organizations is the third most occupation in new shelter (13.3%), existing shelter (8.9%) and control areas (16.9%). Day labour also a source of occupation in new shelter (8.6%), existing shelter (7.3%) and control areas (10.5%).Moreover, people in the surveyed household also engaged in rickshaw/van puller, driver, fishing as well as housewife (**Table 3.7**).

According to HIES (2010) of BBS, 36.1% people's major occupation are agricultural, animal husbandry, forestry and fisheries related works. A household with agriculture occupation keep seed and their agriculture products at their house and the day labourers may have some livelihood asset like utensils, clothes, etc. These assets are important for their livelihood. The good sheltering system reduced the risk of damage of asset, loss of life and injuries during a disaster. This will help to sustain the livelihood of these occupational groups in post disaster system.

Nam	Percentage of household																													
e of																														
Distri																														
ct																														
	Δ	gricult	ure		Day labo	our	Ri	ckshaw	/van		Busine	ss		Servic	e		Drive	r	I	isherm	nan	U	nemplo	yed	ŀ	Housew	ife		Other	s
								puller	•																					
	Pro	oject	Con	Pro	oject	Con	Pr	oject	Con	Pr	oject	Con	Pr	oject	Con	Pr	oject	Con	Pr	oject	Con	Pr	oject	Con	Pro	oject	Con	Pro	oject	Con
	а	rea	trol	а	rea	trol	a	rea	trol	a	rea	trol	a	rea	trol	a	rea	trol	a	rea	trol	a	rea	trol	а	rea	trol	a	·ea	trol
	N	Evic	area	N	Evic	area	N	Evic	area	N	Exic	area	N	Exic	area	N	Evic	area	N	Evic	area	N	Evic	area	N	Evic	area	N	Exic	area
	ew	ting		ew	ting		ew	ting		ew	ting		ew	ting		ew	ting		ew	ting		ew	ting		ew	ting		ew	ting	
Chitta	16	18.9	19.0	9.	11.1	12.1	l.	I.I	-	24	18.9	25.9	16	6.7	13.8	2.	6.7	1.7	-	I.I	1.7	8.	6.7	5.2	11	12.2	6.9	13	16.7	13.8
gong	.0			0			0			.0			.0			0						0			.0			.0		
Cox's	45	26.8	43.4	11	7.0	5.7	١.	-	1.9	23	31.0	32.1	8.	8.5	7.5	-	-	-	8.	2.8	1.9	-	-	-	-	5.6	1.9	Ι.	18.3	5.7
Bazar	.0			.7			7			.3			3						3									7		
Feni	25	35.0	33.3	2.	7.5	16.7	2.	5.0	-	32	27.5	33.3	20	10.0	8.3	-	5.0	-	-	-	-	5.	-	-	2.	2.5	-	10	7.5	8.3
	.0			5			5			.5			.0									0			5			.0		
Laksh	36	40.0	16./	-	10.0	16./	-	10.0	-	33	-	-	20	20.0	50.0	-	-	-	3.	-	-	6. 7	10.0	-	-	-	-	-	-	16./
Noakh	. <i>1</i> 68	50.6	50.6	1	24	63		12			26.5	18.8	.0 3	12.0	63		12	63	5			1				12	63	3	48	63
ali	.4	50.0	50.0	8	2.1	0.5	8	1.2	-	.3	20.5	10.0	5	12.0	0.5	-	1.2	0.5	8	-	-	-	-	-	-	1.2	0.5	5	1.0	0.5
Bhola	20	31.9		-	27.5	-	-	-	-	22	27.5	28.6	29	23.2	50.0	2.	-	7.1	-	1.4	-	4.	1.4	7.1	-	14.5	-	6.	-	7.1
	.8									.9			.2			1						2						3		
Barisal	40	-	36.0	8.	-	-	3.	-	-	26	-	44.0	١.	-	8.0	١.	-	-	Т.	-	-	3.	-	-	5.	-	12.0	8.	-	-
	.0			3			3			.7			7			7			7			3			0			3		
Pirojp	44	-	32.0	3.	-	12.0	5.	-	8.0	5.	-	28.0	15	-	4.0	-	-	-	-	-	4.0	-	-	-	7.	-	8.0	17	-	4.0
Patuali	.2		0.2	ð 40		25.0	ð			8 20		20.2	.4		42	2		42	4		0.2				/		125	.3		0.2
hali	.0	-	0.3	-0 .0	-	23.0	-		-	.0	-	29.2	0. 0	-	т.2	2. 0	-	т.2	- 1 . 0	-	0.3	-	-	-	.0	-	12.5	т . 0	-	0.3
Avera	34	22.		8.		10.5	١.			23	14.		13			0.			2.			3.			4.			7.		
ge	.5	6	26.6	6	7.3	10.5	8	1.9	1.2	.г	6	26.7	.3	8.9	16.9	9	1.4	2.1	1	0.6	1.8	0	2.0	1.4	0	4.0	5.3	1	5.3	7.8

Table 3.7: Occupation of the surveyed household

3.6 Household Living at the Study Area

Most of the entire surveyed household in new shelter, existing shelter and control areas were living in their present house for more than five years. 99.6% surveyed households in the new shelter area, 98.2% surveyed households in the existing shelter area, and 99.4% surveyed households in the contraol areas reported that they lived in their present house for more than five years (**Table 3.8**).

Name of District	Percen living	itage of ho less than	usehold I year	Percer li	ntage of ho ving I-5 ye	usehold ar	Percentage of household living more than 5 year			
	Project area		Control	Proje	ect area	Control	Projec	t area	Control	
	New shelter	Existing shelter	area	New shelter	Existing shelter	area	New shelter	Existing shelter	area	
Chittagong	3.0	1.1	-	1.0	5.6	3.4	96.0	93.3	96.6	
Cox's Bazar	-	1.4	-	-	2.8	1.9	100	95.8	98.1	
Feni	-	-	-	-	-	-	100	100	100	
Lakshmipur	-	-	-	-	-	-	100	100	100	
Noakhali	-	-	-	-	-	-	100	100	100	
Bhola	-	-	-	-	-	-	100	100	100	
Barisal	-	-	-	-	-	-	100	-	100	
Pirojpur	-	-	-	-	-	-	100	-	100	
Patuakhali	-	-	-	-	-	-	100	-	100	
Average	0.3	0.4	-	0.1	1.4	0.6	99.6	98.2	99.4	

Table 3.8: Duration of household living at the survey area

Source: Field survey

3.7 Ownership of the Household

Ownership of house indicates the people live in rented or others house or live in a temporary shed by the side of embankments or roads. In rural area generally, people who do not own house live in others house or under temporary shed by the side of the road or embankment. They are vulnerable people.In the coastal areas of Bangladesh, economies are not dynamic and most of the people have to build their own house by themselves. However, it is very challenging for them to maintain the house as miscellaneous natural disaster strikes every year in the coastal areas. Due to cyclones and floods, the damage of the houses is enormous and they have to rebuilt or repair their houses. Survey data revealed that 98% surveyed households in the new shelter area, 95.8% surveyed households in the existing shelter area, and 99.2% surveyed households in the control area owned their living houses (**Table 3.9**).

Name of District	Percentage	of household ow	n house	Percentage of household not own the house					
	Projec	t area	Control	Proje	ect area	Control			
	New shelter	Existing shelter	area	New shelter	Existing shelter	area			
Chittagong	97.0	95.6	96.6	3.0	4.4	3.4			
Cox's Bazar	100	90.1	96.2	-	9.9	3.8			
Feni	95.0	100	100	5.0	-	-			
Lakshmipur	93.3	90.0	100	6.7	10.0	-			
Noakhali	98.2	98.8	100	1.8	1.2	-			
Bhola	100	100	100	-	-	-			
Barisal	98.3	-	100	1.7	-	-			
Pirojpur	100	-	100	-	-	-			
Patuakhali	100	-	100	-	-	-			
Average	98.0	95.8	99.2	2.0	4.2	0.8			

Table 3.9: 0	Ownership	of the surve	yed household

3.8 Housing Structure of the Surveyed Household

Housing structure is the most important issue to be addressed in before and after disaster protection measures including sheltering people in the disaster prone areas. **Table 3.10** shows four types of housing structures used by the surveyed households in both project and control areas. In the new shelter area, Kancha house was dominant (52.7%) followed by semi-pucca house (34.1%) and jupri type house (32.6%). Similarly, kancha house (53%) was dominant in the existing shelter area followed by semi-pucca house (35.6%) and jupri type house (8.4%). In the control area, kancha house (68.1%) was dominant followed by semi-pucca house (24.3%) and pucca house (8.6%).

Name of	P	ucca (%)		Se	mi- pucca	u (%)		Kancha (%)		Others/Jupri (%)			
District	Project area		Contro	Proje	ct area	Control	Proje	ect area	Contr	Project area		Control	
	New shelter	Existing shelter	l area	New shelter	Existin g shelter	area	New shelter	Existing shelter	ol area	New shelter	Existin g shelter	area	
Chittagong	10.0	11.1	8.6	15.0	16.7	17.2	73.0	71.1	72.4	2	1.1	1.7	
Cox's Bazar	1.7	2.8	3.8	18.3	33.8	15.1	61.7	49.3	66.0	18.3	4.	15.1	
Feni	30	12.5	-	30	27.5	41.7	37.5	50.0	58.3	2.5	10.0	-	
Lakshmipur	23.3	10.0	16.7	20.0	80.0	33.3	46.7	10.0	50.0	10.0	-	-	
Noakhali	3.5	2.4	6.3	24.6	25.3	12.5	71.9	72.3	81.3	-	-	-	
Bhola	4.2	4.3	-	-	30.4	42.9	33.3	65.2	57.I	62.5	-	-	
Barisal	5.0	-	12.0	50.0	-	44.0	45.0	-	44.0	-	-	-	
Pirojpur	19.2	-	-	80.8	-	4.0	-	-	96.0	-	-	-	
Patuakhali	-	-	4.2	-	-	8.3	-	-	87.5	100	-	-	
Average	12.1	7.2	8.6	34.1	35.6	24.3	52.7	53.0	68.I	32.6	8.4	8.4	

Table 3.10: Types of household structure

Source: Field survey

3.9 Sanitation Situation of the Household

Demographically people were less concern about a healthy sanitation in Bangladesh. Even though various campaign took place to make people aware, vulnerable areas like coastal areas, could not upgrade according to the perception at all. Hence, it still remains a major concern in the coastal parts. More on that, several calamities made it harder to establish a sustainable proper sanitation environment. From the **Table 3.11**, 61.1% households in the new shelter area and 71.2% households in the existing shelter areas used sanitary toilet followed by kancha/open toilet by 38.5% in the new shelter area and 28.6% in the existing shelter area. In case of control area households, 57.7% households used sanitary toilet followed by kancha/open toilet by the 42.3% households.

Name of		Sanitary (%)		Kan	cha/ Open	(%)	Others (%)			
District	Proj	ect area	Control	Projec	t area	Control	Proje	ct area	Control	
	New	Existing shelter	area	New	Existing	area	New	Existing	area	
	shelter			shelter	shelter		shelter	shelter		
Chittagong	58.0	55.6	43.1	42.0	43.3	56.9	-	1.1	-	
Cox's	66.7	71.8	49.1	33.3	28.2	50.9	-	-	-	
Bazar										
Feni	80.0	72.5	50.0	20.0	27.5	50.0	-	-	-	
Lakshmipur	66.7	60.0	66.7	33.3	40.0	33.3	-	-	-	
Noakhali	49.1	81.9	56.3	47.4	18.1	43.7	3.5	-	-	
Bhola	89.6	85.5	92.9	10.4	14.5	7.1	-	-	-	
Barisal	78.3	-	88.0	21.7	-	12.0	-	-	-	
Pirojpur	59.6	-	44.0	40.4	-	56.0	-	-	-	
Patuakhali	2.0	-	29.3	98.0	98.0 -		-	-	-	
Average	61.1	71.2	57.7	38.5	28.6	42.3	0.4	0.2	-	

3.10 Lighting Condition of the Household

Inthecase of lighting condition of the surveyed households in the new shelter areas, 55.4% households used electricity as their primary lighting source followed by 37.3% used solar panel and 10.9% households used the lamp. In the existing shelter areas, 69.5% households used electricity as their primary electricy source followed by solar panel used by the 21.1% households and 14.8% households used the lamp as their household lighting source. On the other hand, in the control area households, 60.7% households used electricity as their primary lighting source followed by solar panel (43.7%) and lamp (16.3%) (**Table 3.12**).

Name of				Project	area (%)				Control area (%)				
District		New sh	elter		E	xisting s	shelter						
	Electricity	ectricity Lamp Solar Others			Electricity	Lamp	Solar	Others	Electricity	Lamp	Solar	Others	
Chittagong	76.0	18.0	6.0	-	80.0	12.2	7.8	-	74.2	15.5	103	-	
Cox's	58.3	11.7	30.0	-	64.8	15.5	19.7	-	45.3	20.7	34.0	-	
Bazar													
Feni	95.0	5.0	-	-	100.0			2.5	100.0	-	-	-	
Lakshmipur	36.7	3.3	50.0	-	50.0	30.0	20.0	-	66.7	-	33.3	-	
Noakhali	21.1	12.3	61.4	5.3	49.4	12.0	34.9	3.6	37.5	12.5	50.0	6.3	
Bhola	37.5	2.1	60.4	-	72.5	4.3	23.2	-	64.3	-	35.7	-	
Barisal	65.0	8.3	26.7	-	-	-	-	-	68.0	4.0	28.0	-	
Pirojpur	71.2	17.3	11.5	-	-	-	-	-	40.0	24.0	36.0	-	
Patuakhali	38.0	10.0	52.0	-	-	-	-	-	50.0	20.8	29.2	-	
Average	55.4	10.9	37.3	5.3	69.5	14.8	21.1	3.1	60.7	16.3	43.7	6.3	

Source: Field survey

3.11 Flood Water Level of the Household

Almost every year in monsoon season, Bangladesh suffers from the flood. In the coastal areas, the situation is worse. Due to heavy rainfall, the bursting of river banks the river overflow and its surrounded areas are drowned. Moreover, due to global warming, the sea level is increasing. Therefore, the flood is a common phenomenon in Bangladesh. Present study findingsin the control area revealed that, 58.7% households in the control area reported that their household became above the flood water level during disaster, and rest 41.3% households stated that their household became below the flood water level during disaster (**Table 3.13**).

Table 3.13: Situation of household at flood water level during disaster

District	Percentage of household living above flood water level	Percentage of household living below the flood water level
	Control area	Control area
Chittagong	53.4	46.6
Cox's Bazar	39.6	60.4
Feni	91.7	8.3
Lakshmipur	83.3	16.7
Noakhali	43.8	56.2
Bhola	57.1	42.9
Barisal	64.0	36.0
Pirojpur	12.0	88.0
Patuakhali	83.3	16.7
Average	58.7	41.3

3.12 Household Income and Expenditure

Last 12 months income and expenditure in the project and control areas are shown in **Tables 3.14** and **3.15**. Monthly household income in 2010 was BDT 11, 479.00 and per capita income was BDT 2,553.00.

To be above poverty level a household should have a yearly income and expenditure amount of BDT 101,221.00 and above in the districts of Chittagong Division and BDT 80,191.00and above in the districts of Barisal Division. On the other hand, average monthly expenditure was BDT 11,200.00. Moreover, monthly household nominal income and consumption expenditure was BDT 9,158.00 and9, 826.00in Barisal Division and BDT 14,092.00 and 14,360.00in Chittagong Division (HIES 2010 of BBS).

		Income of the Household (in BDT)										
Name of	Name of Minimum income as report		orted	Maximu	ım income as rep	orted		Mean income				
District	Proje	ect area	Control area	Projec	ct area	Control area	Proje	ect area	Control area			
	New shelter	Existing shelter	Control area	New shelter	Existing shelter	Control al ea	New shelter	Existing shelter	Control area			
Chittagong	30,000.00	30,000.00	30,000.00	500,000	360,000.00	300,000.00	159,700.00	143,833.00	125,086.00			
Cox's Bazar	50,000.00	24,000.00	48,000.00	240,000	300,000.00	720,000.00	220,366.00	240,859.00	136,207.00			
Feni	70,000.00	50,000.00	72,000.00	400,000	450,000.00	220,000.00	187,600.00	172,925.00	176,000.00			
Lakshmipur	1,20,000.00	1,20,000.00	1,20,000.00	360,000	260,000.00	220,000.00	213,833.00	193,000.00	171,666.00			
Noakhali	50,000.00	46,000.00	72,000.00	300,000	400,000.00	200,000.00	118,561.00	132,084.00	115,062.00			
Bhola	1,44,000.00	50,000.00	20,000.00	600,000	600,000.00	350,000.00	291,937.00	283,942.00	147,928.00			
Barisal	50,000.00	-	60,000.00	500,000	-	350,000.00	144,116.00	-	162,800.00			
Pirojpur	3,60,000.00	-	40,000.00	300,000	-	200,000.00	133,538.00	-	114,080.00			
Patuakhali	40,000.00	-	60,000.00	100,000	-	240,000.00	129,320.00	-	108,375.00			
Average	48,333.33	40,000.00	50,250.00	366,666.67	395,000.00	311,111.11	177,663.44	194,440.50	139,689.33			

Table 3.14: Last 12 month's household income of the surveyed households

Source: Field survey

Table 3.15: Last 12 month'shouseholdexpenditure of the surveyed households

Name of				Expenditure	of the Househol	d (in BDT)			
District	Minimu	imexenditure as re	eported	Maximu	m expenditure as	reported		Mean expenditu	ire
	Proje	ct area	Control area	Proje	ect area	Control area	Proje	ct area	Control area
	New shelter	Existing shelter		New shelter	Existing shelter		New shelter	Existing shelter	
Chittagong	30,000.00	30,000.00	25,000.00	700,000.00	300,000.00	300,000.00	155,202.00	144,943.00	125,472.00
Cox's Bazar	40,000.00	70,000.00	50,000.00	200,000.00	140,000.00	600,000.00	193,101.00	194,385.00	131,547.00
Feni	72,000.00	79,000.00	72,000.00	320,000.00	400,000.00	220,000.00	175,750.00	175,774.00	171,200.00
Lakshmipur	1,20,000.00	1,20,000.00	1,20,000.00	360,000.00	260,000.00	220,000.00	210,625.00	180,000.00	171,666.00
Noakhali	60,000.00	46,000.00	72,000.00	250,000.00	350,000.00	180,000.00	114,240.00	127,182.00	107,800.00
Bhola	1,68,000.00	90,000.00	18,000.00	480,000.00	480,000.00	300,000.00	250,288.00	255,888.00	126,333.00
Barisal	60,000.00	-	70,000.00	390,000.00	-	262,000.00	146,092.00	-	162,550.00
Pirojpur	35,000.00	-	45,000.00	250,000.00	-	200,000.00	127,807.00	-	115,240.00
Patuakhali	31,000.00	-	40,000.00	830,000.00	-	2,00,000.00	132,270.00	-	109,347.00
Average	46,857.14	63,000.00	49,000.00	420,000.00	321,666.67	285,250.00	167,263.89	179,695.33	135,683.89

Average last 12 month's reported minimum income was BDT 48,333.33 in the new shelter area, BDT 40,000.00 in the existing shelter area, and BDT 50,250.00 in the control area. Similarly, average last 12 month's reported maximum income was BDT 366,666.67 in the new shelter area, BDT 395,000.00 in the existing shelter area, and BDT 311,111.11 in the control area. Finally, average last 12 month's reported mean income was BDT 177,663.44 in the new shelter area, BDT 194,440.50 in the existing shelter area, and BDT 139,689.33 in the control area (**Table 3.14**).

Specifically, highest amount of mean household income in the last 12 months in the new shelter areas was recorded in the Bhola (BDT 2,91,937.00), Cox's Bazar (BDT 2,20,366.00), Lakshmipur (BDT 2,13,833.00), Feni (BDT 1,87,600.00), and Chittagong (BDT1,59,700.00). In the existing shelter areas, highest amount of mean income was recorded in Bhola (BDT 2,83,942.00), Cox's Bazar (BDT 2,40,859.00), Lakshmipur (BDT 1,93,000.00), and Feni (BDT 1,72,925.00). In the control areas, highest mean income was recorded in Feni (BDT1,76,000.00), Lakshmipur (BDT 1,71,666.00), Barisal (BDT 1,62,800.00), and Bhola (BDT 1,47,928.00) (**Table 3.14**).

Average last 12 month's reported minimum expenditure was BDT 46,857.14 in the new shelter area, BDT 63,000.00 in the existing shelter area, and BDT 49,000.00 in the control area. Similarly, average last 12 month's reported maximum expenditure was BDT 420,000.00 in the new shelter area, BDT 321,666.67 in the existing shelter area, and BDT 285,250.00 in the control area. Finally, average last 12 month's reported mean expenditure was BDT 167,263.89 in the new shelter area, BDT 179,695.33 in the existing shelter area, and BDT 135,683.89in the control area (**Table 3.15**).

Specifically, in case of household expenditure (last 12 months) in the new shelter areas, highest amount was recorded in Bhola (BDT 2,50,288.00), Lakshmipur (BDT 2,10,625.00), Cox's Bazar (BDT 1,93,101.00), and Feni (BDT 1,75,750.00). In the existing shelter areas, highest amount of household expenditure was recorded in Bhola (BDT 2,55,888.00), Cox's Bazar (BDT 1,94,385.00), Lakshmipur (BDT 1,80,000.00), and Feni (BDT 1,75,774.00). In the control areas, highest amount of household expenditure was recorded in Lakshmipur (BDT 1,71,666.00), Feni (BDT 1,71,200.00), Barisal (BDT 1,62,550.00), Cox's Bazar (BDT 1,31,547.00), and Bhola (BDT 1,26,333.00) (**Table 3.15**).

3.13 Poverty Status of the Household

From the analysis of HH survey information done in 2017 by MDSP, it can be seen that the people of different MDSP targeted UZ under Chittagong and Barisal Divisions living below national poverty line is 28.46% on average (**Table 3.16**). It has consistency with the ADB's statistical data on poverty and socio economic development in Bangladesh carried in 2015 which is 31.5%.

		Poverty sta	tus (in percentage) ⁷	
Division	District	Project Area	Control Area	
		Below poverty line	Below poverty line	
	Chittagong			
	Cox's Bazar			
Chittagong	Feni		21.15	
	Lakshmipur	20.97		
	Noakhali			
	Bhola			
Partical	Barisal		24.44	
Darisai	Pirojpur	35.95	30.00	
	Patuakhali			
Average		28.46	28.90	

Table 3.16: Poverty status of the surveyed household according to national standard

Note: Poverty range: Chittagong Division: Upper Poverty Line: BDT 1,963.40; Barisal Division: Upper Poverty Line: BDT 1,788.28 (HIES, 2010).

3.14 Vulnerable Population Needing Shelter in MDSP targeted districts.

There is no statistical figure for determining the actual number of vulnerable people needing safe shelter during disasters. However, it may be considered that the people living below poverty line in the region will require shelter during disasters. From the above consideration, the number of vulnerable people needing shelter in MDSP targeted districts would be 28.46% of the population in the targeted district i.e total targeted population would be 65,26,220 [2,29,31,200x 28.46%].

As per Indicator **P-2 of Result framework** of PAD, the total vulnerable population needing shelter has been estimated at 61,82,500.

⁷According to CBN method (HIES 2010), the poverty line has been adjusted considering inflation rate at 2016 measured by Bangladesh Bank (5.92 inflation rate at 2016)

Chapter 4: Findings on Existing Protection Measures against Disasters

4.1 Training Received on Management

Respondents living in the coastal area received different trainings on disaster management from government, donors and NGOs. Survey data shows that respondents of new shelter (21.4%), existing shelter (24.2%) and control area (3.8%) received trainings on disaster management. More than two third of the respondents did not receive any training. The highest percentage of respondents in Bhola district (50% in new shelter area and 43. 5% in existing shelter) received training. In Noakhali district (49.1% in new shelter area and 60.2% in existing shelter area). However, the lowest percentage of trainings received in Barisal (5.0%), Cox's Bazar (8.3% and 5.6%), Chittagong (10.0% and 11.1%), and Pirojpur (9.6%) districts in both the new shelter and existing shelter areas (**Table 4.1**).

Name of the District	Percentage	e of household re training	ceived	Percentag	e of household is n training	ot received
	Proje	ect area	Control	Proj	ect area	Control
	New shelter	Existing shelter	area	New shelter	Existing shelter	area
Chittagong	10	11.1	1.7	90	88.9	98.3
Cox's Bazar	8.3	5.6	9.4	91.7	94.4	90.6
Feni	35.0	15.0	10.0	65.0	85.0	90.0
Lakshmipur	10.0	10.0	10.0	90.0	90.0	90.0
Noakhali	49.1	60.2	25.0	50.9	39.8	75.0
Bhola	50.0	43.5	35.7	50.0	56.5	64.3
Barisal	5.0	-	8.0	95.0	-	92.0
Pirojpur	9.6	-	20.0	90.4	-	80.0
Patuakhali	16.0	-	4.2	84.0	-	95.8
Average	21.4	24.2	13.8	78.6	75.8	86.2

Table 4.1: Disaster management related training received by the respondent

Source: Field survey

Surveyed respondents from the new shelter area reported that they received training from CPP (50%), local NGOs (67.3%), and other sources (28.8%). In the existing shelter area, respondents received training from CPP (34%), NGOs (57.5%), and other sources (48.9%). On the other hand, control area respondents received training from CPP (13.7%), NGOs (35%), and other sources (69%) (**Table 4.2**).

Sable 4.2: Source of training of	on disaster management	(multiple responses)
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Name of the	Project area (%)							Control area (%)		
District	Ν	lew shelter		E	Existing shelter					
	CPP	NGOs	Others	CPP	NGOs	Others	CPP	NGOs	Others	
Chittagong	-	60	40	-	70.0	30.0	-	1.7	98.3	
Cox's Bazar	-	80	20	-	75.0	25.0	-	7.5	92.5	
Feni	-	85.7	14.3	-	16.7	83.3	-	-	-	
Lakshmipur	-	100	-	-		100	-	-	-	
Noakhali	50	42.9	7.2	18.0	76.0	6.0	18.8	6.3	74.9	
Bhola	66.7	33.3	-	50.0	50.0	-	14.3	21.4	64.3	
Barisal	33.3	66.7	-	-	-	-	8.0	92.0	-	
Pirojpur	-	100	-	-	-	-	-	20.0	80.0	
Patuakhali	-	37.5	62.5	-	-	-	-	95.8	4.2	
Average	50.0	67.3	28.8	34.0	57.5	48.9	13.7	35.0	69.0	

Source: Field survey; **Note:** CPP: Cyclone Preparedness Programme; NGO: Local NGO initiatives; Others: Union Parishad and Red Crescent Societyinitiatives

4.2 Disaster Shelter Used by Household

Survey data reveals that three-fourth (75.2%) households of the existing shelter area generally take shelter during natural disasters in which 73.2% in Cox's Bazar, 77% in Feni, 80.7% in Noakhali, 87% in Bhola, 73.2% in Pirojpur and 77.5% in Patuakhali (**Figure 4.1**).





Source: Field survey

Those who did not go to shelters during disaster generally take shelter on embankment (new shelter area 11.5%, existing shelter area 19.1%, control area 14.1%), own house (new shelter area 67.8%, existing shelter area 66.2% and control area 48.3%) and relatives house (new shelter area 26.8%, existing shelter area 30.5%, and control area 48.5%) (**Table 4.3**).

Name of District	Em	ıbankmer	nt (%)	Relativ	ves on hig (%)	her land Stay in own house (%)		use (%)	Others (%)			
	Proje	ct area	Control	Proje	ct area	Control	Proje	ct area	Control	Proje	ct area	Control
	New shelter	Existing shelter		New shelter	Existing shelter	area	New shelter	Existing shelter	area	New shelter	Existing shelter	area
Chittagong	-	-	1.7	28.9	22.2	31.0	71.1	75.0	56.9	-	2.8	10.3
Cox's Bazar	7.1	4.8	8.5	9.5	14.3	18.3	83.3	71.4	42.3	-	-	31.0
Feni	11.8	-	-	-	20.0	66.7	88.2	80.0	33.3	-	-	-
Lakshmipur	-	-	-	46.2	33.3	66.7	53.8	66.7	33.3	-	-	-
Noakhali	3.8	-	6.3	48.1	62.5	56.3	44.2	37.5	31.3	3.8	-	6.3
Bhola	33.3	33.3	50.0	6.7	-	-	60.0	66.7	50.0	-	-	-
Barisal	1.7	-	3.8	3.3	-	-	93.3	-	96.2	1.7	-	-
Pirojpur	-	-	-	30.5	-	62.9	61.0	-	37.1	8.5	-	-
Patuakhali	-	-	-	40.8	-	37.5	55.I	-	54.2	4 .I	-	8.3
Average	11.5	19.1	14.1	26.8	30.5	48.5	67.8	66.2	48.3	4.5	2.8	14.0

Table 4.3:	Places	of she	elterduring	disaster
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4.3 Availability of Disaster Shelter

Respondents from the new shelter area reported that on an average there are about 98 disaster shelters in the UZs of Chittagong, 79 shelters in the UZs of Cox's Bazar, 90 shelters in the UZs of Feni, 95 shelters in the UZs of Lakshmipur, 63 shelters in the UZs of Noakhali, 73 shelters in the UZs of Bhola, 99 shelters in the UZs of Barisal, 51 shelters in the UZs of Piroojpur, and 39 shelters in the UZs of Patuakhali.

Respondents from the existing shelter area stated that on an average there are 83 disaster shelters in the UZs of Chittagong, 86 shelters in the UZs of Cox's Bazar, 50 shelters in the UZs of Feni, 99 shelters in the UZs of Lakshmipur, 67 shelters in the UZs of Noakhali, and 88 shelters in the UZs of Bhola.

However, 88.2% respondents from the new shelter area and 88.5% respondents from the existing shelter area reported that the current number of disaster shelters is not enough for the people to take shelter during disasters.

4.4 Satisfaction and Dissatisfaction on the Condition of Existing Disaster Shelter Centres.

Respondents from the existing shelter areas expressed their satisfaction on the use of disaster shelter. 11.8% existing shelter area people were satisfied for the following reasons : accessibility (82.2%), adequate facilities of water supply, sanitation, electricity-power and solar panel, storage for goods, livestock shed, health services, etc. (38%), adequate capacity to accommodate more people (72.4%), and safety of life and property from disasters (33.8%) (**Table4.4**).

Table 4.4: Community satisfaction on the cor	ndition of existing	disaster	shelter	centre	(multiple
res	ponses)				

Name of	Satisfied (%)	Accessible (%)	Adequate facilities (%)	Adequate capacity to accommodate people (%)	Safe of life and property (%)
District	Existing shelter	Existing shelter	Existing shelter	Existing shelter	Existing shelter
Chittagong	-	-	-	-	-
Cox's Bazar	4.2	100.0	33.3	66.7	33.3
Feni	13.5	40.0	60.0	80.0	40.0
Lakshmipur	70.0	100.0	14.3	42.9	28.6
Noakhali	10.5	88.9	44.4	100.0	33.3
Bhola	-	-	-	-	-
Average	11.8	82.2	38.0	72.4	33.8

Source: Field survey

88.2% expressed dissatisfaction due to the following: inaccessibility to go to shelter (66.7%), inadequate facilities of water supply, sanitation, electricity-power and solar panel, storage for goods, livestock shed, health services, etc. (95.6%), and unsafe for protection of life and property (46.2%) (**Table 4.5**).

Name of District	Dissatisfied (%)	Inaccessible (%)	Inadequate facilities (%)	Unsafe for protection of life and property (%)
	Existing shelter	Existing shelter	Existing shelter	Existing shelter
Chittagong	100.0	79.5	92.0	77.3
Cox's Bazar	95.8	82.4	100.0	80.9
Feni	86.5	77.4	96.8	12.9
Lakshmipur	30.0	100.0	100.0	-
Noakhali	89.5	50.8	89.2	58.5
Bhola	100.0	10.1	95.7	1.4
Average	88.2	66.7	95.6	46.2

 Table 4.5: Dissatisfaction on the disaster shelter centre (multiple responses)

Source: Field survey

4.5 Multipurpose Uses of Disaster Shelter

Respondents in the existing shelter area expressed their perception on the scope of multiple use (e.g., primary school, community school, market, social programmes, etc.) of disaster shelter: 66.1% respondents said that there scope (**Table 4.6**).

Name of District	Yes (%)	No (%)	Don't Know (%)
	Existing shelter	Existing shelter	Existing shelter
Chittagong	65.6	16.7	17.8
Cox's Bazar	98.6	1.4	-
Feni	55.0	25.0	20.0
Lakshmipur	60.0	-	40.0

Table 4.6: Disaster	shelter	centre	used fo	r multiple	pur	poses
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Average	66.1	14.3	20.7
Patuakhali	-	-	-
Pirojpur	-	-	-
Barisal	-	-	-
Bhola	52.2	30.4	17.4
Noakhali	65.1	26.5	8.4

Source: Field survey

4.6 Availability of Early Warning System of Disaster

Availability of early warning of disaster found high, both in the new shelter, existing shelter and control areas respectively. It was found that 88.7% respondents in the new shelter area, 95% respondents in the existing shelter area and 90.5% respondents in the control area stated that they avail early warning system during disaster (e.g., cyclone and other disasters) (**Table 4.7**).

	Availabilit	y of early warning	system	Not availab	ility of early warr	rning system		
Name of	Projec	ct area (%)	Control	Project	area (%)	Control area (%)		
the District	New shelter	Existing shelter	ai ea (76)	New shelter	Existing shelter	29.3		
Chittagong	77.0	75.6	70.7	23	24.4	18.9		
Cox's Bazar	85.0	98.6	81.1	15	1.4	0		
Feni	100	100	100	0	0	0		
Lakshmipur	100	100	100	0	0	0		
Noakhali	96.5	98.8	100	3.5	1.2	0		
Bhola	100	97.1	100	0	2.9	0		
Barisal	100	-	100	0		0		
Pirojpur	100	-	100	0		37.5		
Patuakhali	40.0	-	62.5	60		9.5		
Average	88.7	95.0	90.5	11.3	5.0	9.5		

Table 4.7: Availability of early warning system of disaster

Source: Field survey

4.7 Sources of Early Warning System on Disaster

Among the sources of early warning system, most of the people in new shelter area (39.7%), existing shelter area (43.6%) and control area (44.7%) use television. People also use mobile network in new sheter area (28.7%), existing shelter area (25.6%) and control area (27.3%) as early warnig system. Community also use other sources like newspaper, neighbours and relatives, miking, etc. These sources are in new shelter area (18.1%), existing shelter area (23.6%) and control area (27.3%) (**Table 4.8**).

Name		Radio (%)			TV (%)		Mob	ile Network (%)		Others (%)		Do	o not received	1
of the	Proje	ect area	Con	Proje	ect area	Contr	Proje	ect area	Contr	Proje	ct area	Contr	Proje	ect area	Contr
Distric	New	Existing	trol	Newsh	Existingshe	ol	Newshelt	Existingshel	ol	Newshelt	Existingshel	ol	Newshelt	Existingshel	ol
t	shelter	shelter	area	elter	lter	area	er	ter	area	er	ter	area	er	ter	area
Chittag	7.8	11.9	12.8	33.3	32.7	30.9	22.9	20.1	21.3	28.1	30.2	24.5	7.8	5.0	10.6
ong															
Cox's	14.4	15.9	9.1	32.4	26.1	31.1	23.0	21.6	29.5	-	35.2	30.3	-	1.1	-
Bazar															
Feni	-	13.4	-	41.5	41.5	44.4	42.6	28.0	44.4	16.0	17.1	11.1	-	-	-
Lakshmi	-	-	21.4	46.2	50.0	42.9	46.2	45.0	28.6	7.7	5.0	7.1	-	-	-
pur															
Noakhal	11.9	6.0	13.0	39.3	52.0	56.3	20.2	21.0	26.1	27.4	21.0	21.7	1.2	-	-
i															
Bhola	1.3	-	-	61.5	59.I	73.3	11.5	17.9	6.7	25.6	33.0	20.0	-	-	-
Barisal	26.5	-	26.0	41.0	-	42.0	21.4	-	16.0	11.1	-	16.0	-	-	-
Pirojpur	31.3	-	24.5	40.6	-	49.0	28.1	-	26.5	-	-	-	-	-	-
Patuakh	13.2	-	7.1	21.1	-	32.1	42.1	-	46.4	10.5	-	10.7	13.2	-	3.6
ali															
Averag	15.2	11.8	163	397	43.6	44 7	28.7	25.6	27.3	181	23.6	177	74	31	7
е	13.2	11.0	10.5	57.1	73.0		20.7	23.0	27.5	10.1	23.0		г.т	5.1	<i>,</i>

Table 4.8: Sources of receiving early warning of disaster (multiple responses)

4.8 Effectiveness of the Early Warning System

Most of the respondents of the newshelter, existing shelter and control area expressed their views on the effectiveness of early warning system. The present early warning system was very effective as reported by 79.1% people in new shelter area, 76.3% in existing shelter area and 90.8% in control area. 20.4% people in the new shelter area, 21.5% in the existing shelter area and 21.5% in the control area also said that the present early warning system was somewhat effective to save life and resources from natural disasters (**Table 4.9**).

Name of the	Ver	y effective	(%)	Some	what effectiv	ve (%)	Not effective (%)				
District	Projec	t area	Control	Projec	ct area	Control	Project	t area	Control		
	New shelter	Existing shelter	area	New shelter	Existing shelter	area	New shelter	Existing shelter	area		
Chittagong	97.9	91.8	97.6	2.1	8.2	2.4	-	-	-		
Cox's Bazar	75.0	82.9	100	25.0	17.7	-	-	-	-		
Feni	27.5	32.5	100	72.5	60.0	-	-	7.5	-		
Lakshmipur	100	100	100	-	-	-	-	-	-		
Noakhali	63.2	77.1	62.5	31.6	18.1	31.3	5.3	4.8	6.3		
Bhola	75.0	73.5	71.4	25.0	25.0	28.6	-	1.5	-		
Barisal	100	-	100	-	-	-	-	-	-		
Pirojpur	88.5	-	92.0	11.5	-	8.0	-	-	-		
Patuakhali	84.4	-	93.3	15.6	-	6.7	-	-	-		
Average	79. I	76.3	90.8	20.4	21.5	8.6	0.6	2.3	0.7		

Table 4.9: Effectiveness of	the early warning syst	em of disaster
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Source: Field survey

4.9 Protection of Livestock during Disaster

Livestock is an integral sector of the agricultural economy of Bangladesh. It serves as an essential source of protein, employment generation, export earning, and provision of food security. Livestock resources play an important role in the sustenance of landless and vulnerable people, livelihood options for the rural poor and are potentially important for poverty reduction. Although the livelihood of poor, vulnerable and marginal farmers are highly depending on the livestock (they know the recovery will be difficult without them) but on the issue of protecting livestock from disaster there is still a significant gap. Only a small fraction of disaster shelters have incorporated any type of livestock component in their construction.On the other hand, the GDP growth (3.21%), protein supply, income generating activities (20% directly and 50% indirectly) is closely related to the proper and targeted growth of the livestock sector.

In the coastal areas, people rear cow, goat, sheep and poultry to meet their basic needs as well as extra income. The survey found that livestock are the first victims of any disaster events like a cyclone in the coastal areas. Generally, the affected people considered their household belongings firstly, than the livestock or poultry. On the other hand, the households undertaken cattle and poultry in the shelter during cyclones. A substantial number of households in the project area have possession of livestock and poultry resources.

Before disaster, people in the new shelter area generally keeplivestock in the cowshed (46.4%) followed by embankment (35.1%), killa (26%), house (24.5%), and disaster shelter (11.6%). Similarly, people of exisiting shelter keep livestock on embankment (37.2%) followed by cowshed (30.3%), house (29.3%), disaster shelter (27.7%), and killa (14.9%) (**Table 4.10**).

Name of District	Parentage of household												
Name of District					F	arentage of n	iousenoia						
	Disaste	r shelter	Embankment		Cow shed		Ho	use	Ki	illa	Others		
	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	
	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	
Chittagong	15.1	36.4	11.6	2.6	31.4	24.7	48.8	37.7	5.8		-	-	
Cox's Bazar	25.0	32.7	9.6	1.9	73.I	69.2	25.0	38.5	17.3	15.4	-	-	
Feni	17.5	5.0	62.5	57.5	17.5	35.0	22.5	22.5	90.0	12.5	-	5.0	
Lakshmipur	-	-	66.7	90.0	46.7	10.0	16.7	40.0	43.3	30.0	-	-	
Noakhali	3.5	27.5	24.6	3.8	52.6	22.5	8.8	32.5	7.0	15.0	14.0	-	
Bhola	6.5	36.8	93.5	67.6	17.4	20.6	6.5	4.4	4.3	1.5	-	-	
Barisal	1.8	-	10.5	-	29.8	-	86.0	-	-	-	3.5	-	
Pirojpur	-	-	2.0	-	90.2	-	2.0	-	-	-	9.8	-	
Patuakhali	-	-	-	-	59.2	-	4.1	-	14.3	-	32.7	-	
Average	11.6	27.7	35.1	37.2	46.4	30.3	24.5	29.3	26.0	14.9	15.0	5.0	

Table 4.10: Keeping livestock during disaster (multiple responses)

In the new shelter areas, all the respondents from Chittagong (100%), Cox's Bazar (100%), Feni (100%), Lakshmipur (100%), Barisal (100%) and Patuakhali (100%) stated that their livestock needing shelter during disaster and it is necessary to provide separate place for livestock in the disaster shelter. However, respondents from Noakhali (93%), Bhola (95.8%) and Pirojpur (98.1%) also feel that livestock sheter is of utmost important during disaster. On the other hand, all the respondents (100%) in the existing shelter areas (except Chittagong 96.7%) reported that it is necessary to keep a separate place for livestock in the disaster shelter.

In absence of separate livestock shelters during disaster, respondents reported that they will keep livestock in own house (Chittagong 66.7%, Cox's Bazar 100%, Noakhali 40%, Bhola 75%, and Barisal 100%) as well as taking shelter in nearest building (Chittagong-33.3%) and move to safer place (Noakhali-60% and Bhola-25%. In the existing shelter area people said that they want to stay in the own house (Chittagong-100%).

Respondents from Cox's Bazar (100%) and Barisal (100%) in the new shelter area do not prefer anything except keeping livestock in their own house. 75% respondents of Bhola prefer to keep in own house and rest of them prefer to move in a safe place (25%). In Noakhali, 40% respondents prefer to keep in own house and rest of them prefer to move in a safer place (60%). On the other hand, 66.7% respondents from Chittagong prefer to keep in the own house, 33.3% prefer to take shelter in the nearest building. At the existing shelter area, the all respondents (100%) from Chittagong like that it is betterment to keep the livestock in the own house rather than move to any other place.

4.10 Risks from Disasters in Absence of Multipurpose Disaster Shelter

Current survey data reveals that new shelter areas people face different types of risks in absence of multipurpose disaster shelter such as risks of loosing own and family members (98.3%), risks of loosing livestock (90.3%), risks of loosing money (78%), risks of damaging clothes (78.5%), risks of loosing households assets (71.5%), risks of loosing jewelleries (56%), and risks of damaging educational materials (51.2%). Some of the respondents (39.5%) also reported that they do not face any kind of risks during disasters (**Table 4.11**).

Simialrly, existing shelter area people face different types of risks in absence of multipurpose disaster shelter such as life risks of own and family members (94%), risks of loosing livestock (83.7%), risks of loosing money (66.8%), risks of damaging clothes (67.5%), risks of loosing households assets (64.2%), risks of loosing jewelleries (46.6%), and risks of damaging educational materials (55.1%). Here, some respondents (16.6%) also said that they did not face any kind of risks during disasters (**Table 4.11**).

In case of control area people, they face different types of risks in absence of multipurpose disaster shelter such as life risks of own and family members (98.2%), risks of loosing livestock (89.5%), risks of loosing money (83%), risks of damaging clothes (81.3%), risks of loosing household's assets

(70.4%), risks of loosing jewelleries (63%), and risks of damaging educational materials (79%). Here, half of the respondents (48.6%) also said that they did not face any kind of risks during disasters (**Table 4.11**).

Name of										Parent	age of hous	sehold												
District	Family	life risk	Control area	Risk for lives	loosing tock	Control area	Risk for of m	loosing oney	Control area	Risk damaging	c for g clothes	Control area	Risl hous ass	k for ehold sets	Co ntr ol are	Risl Ioo: jewe	k for sing ellery	Co ntr ol are	Ris dam educa to	k of aging ational ols	Con trol are a	Do no any	ot have risks	Control area
	New shelter	Existin g shelter		New shelter	Existin g shelter		New shelter	Existin g shelter		New shelter	Existin g shelter		Ne w shel ter	Exis ting shel ter	а	Ne w shel ter	Exis ting shel ter	а	Ne w shel ter	Exist ing shelt er		Ne w shel ter	Existi ng shelte r	
Chittagong	100.0	100.0	98.2	85.0	83.0	82.5	98.0	97.7	93.0	99.0	94.3	98.2	98. 0	97.7	94. 7	93. 0	89.8	91. 2	68. 0	69.3	75.4	39.0	30.7	29.8
Cox's Bazar	96.7	98.6	98.1	98.3	87.3	98.1	60.0	52.1	60.4	73.3	87.3	62.3	96. 7	94.4	94. 3	58. 3	53.5	52. 8	73. 3	90.1	69.8	40.0	33.8	56.6
Feni	100.0	77.5	100.0	87.5	82.5	100.0	92.5	82.5	91.7	87.5	72.5	100.0	70. 0	62.5	58. 3	42. 5	47.5	58. 3	7.5	45.0	83.3	2.5	5.0	-
Lakshmipu r	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	86.7	90.0	100.0	63. 3	50.0	50. 0	20. 0	40.0	-	6.7	80.0	100. 0	-	-	-
Noakhali	87.7	89.2	87.5	73.7	69.9	68.8	43.9	49.4	100.0	38.6	34.9	43.8	28. 1	25.3	25. 0	26. 3	30.1	12. 5	29. 8	16.9	43.8	21.1	10.8	43.8
Bhola	100.0	98.6	100.0	87.5	79.7	64.3	22.9	18.8	14.3	45.8	26.1	35.7	43. 8	55.1	35. 7	18. 8	18.8	21. 4	10. 4	29.0	-	-	2.9	-
Barisal	100.0	-	100.0	100.0	-	100.0	96.6	-	100.0	96.6	-	100.0	100 .0	-	100 .0	94. 9	-	100 .0	100 .0	-	100. 0	40.7	-	26.1
Pirojpur	100.0	-	100.0	82.7	-	92.0	88.5	-	88.0	78.8	-	92.0	51. 9	-	76. 0	50. 0	-	68. 0	65. 4	-	60.0	53.8	-	
Patuakhali	100.0	-	100.0	98.0	-	100.0	100.0	-	100.0	100.0	-	100.0	91. 8	-	100 .0	100 .0	-	100 .0	100 .0	-	100. 0	79.6	-	83.3
Average	98.3	94.0	98.2	90.3	83.7	89.5	78.0	66.8	83.0	78.5	67.5	81.3	71. 5	64.2	70. 4	56. 0	46.6	63. 0	51. 2	55.1	79.0	39.5	16.6	48.6

Table 4.11: Risks faced by the household in absence of multipurpose disaster shelter (multiple responses)

4.11 Missed Opportunities in Absence of Multipurpose Disaster Shelter

The multipurpose disaster shelters have scope for different types of socio-cultural benefits. But in absence of these shelters, community people reported that they might miss the various opportunities. New shelter area people reported that in absence of multipurpose disaster shelters they could miss the different facilities such as child education (86.8%), arrangement of training for capacity development (83%), arrangement of social/cultural programmes (82.9%), community gathering place for mitigating social conflicts (73.3%), primary health care treatment (66.1%), and other social/family/cultural benefits (38.6%) (**Table 4.12**).

Similarly, existing shelter area people reported that they missed the facility for child education (91.8%), training facility for capacity development (85.7%), place for social/cultural programmes (72.3%), community gathering place for mitigating social conflicts (66.6%), place for primary health care treatment (55.4%), and other social/family/cultural benefits (15.8%) (**Table 4.12**).

Control area people also stated that they missed the facility for child education (94.7%), training facility for capacity development (92.1%), place for social/cultural programmes (84.2%), community gathering place for mitigating social conflicts (77.9%), place for primary health care treatment (71.2%) and other social/family/cultural benefits (46.1%) (**Table 4.12**).

4.12 Problems Faced by Household in the use of Disaster Shelter

The surveyed respondents in the existing shelter area reported that they face different types of problems in the use of disaster shelter. Major problems in the existing shelter area were as follows: congestion or overcrowding of people in a limited space (79.1%), broken door (47.8%), broken window (53.1%), no store room facility for keeping goods, documents and assets (71.2%), insufficient number of toilet for all (59.8%), no separate toilet facility for women (75.1%), unavailability of drinking water (64.1%), rain water drops enter in to the shelter during rain (23.5%), and no approach road to go to shelter (22.3%) (**Table 4.13**).

Name of								Pa	arentage o	of househ	old							
District	С	hild educat	ion	Capacity development			S	ocial/cultu	iral	Community gathering			Prir	nary health	care	Other socio-cultural		
					training		Р	rogramm	es		place	-		treatment	•		benefits	
	New	Existing	Control	New	Existing	Control	New	Existing	Control	New	Existing	Control	New	Existing	Control	New	Existing	Control
	shelter	shelter	area	shelter	shelter	area	shelter	shelter	area	shelter	shelter	area	shelter	shelter	area	shelter	shelter	area
Chittagong	99.0	98.8	100.0	98.0	89.5	98.2	98.0	94.2	98.2	98.0	93.0	94.7	91.0	89.5	82.5	33.0	30.2	38.6
Cox's Bazar	85.0	88.7	90.6	91.7	94.4	94.3	90.0	97.2	79.2	71.7	70.4	77.4	98.3	95.8	98.1	36.7	32.4	39.6
Feni	52.5	92.5	100.0	55.0	97.5	100.0	92.5	70.0	100.0	87.5	75.0	100.0	75.0	15.0	-	5.0	7.5	-
Lakshmipur	70.0	90.0	100.0	83.3	90.0	100.0	96.7	90.0	83.3	86.7	90.0	100.0	30.0	-	-	10.0	-	-
Noakhali	98.2	95.2	93.8	89.5	89.2	87.5	35.1	38.6	62.5	36.8	48.2	43.8	43.9	34.9	37.5	19.3	6.0	6.3
Bhola	97.9	85.5	92.9	56.3	53.6	57.I	39.6	43.5	42.9	22.9	23.2	21.4	12.5	42.0	28.6	-	2.9	-
Barisal	100.0	-	100.0	100.0	-	100.0	100.0	-	100.0	100.0	-	100.0	100.0	-	100.0	50.0	-	48.0
Pirojpur	100.0	-	100.0	73.1	-	92.0	94.2	-	92.0	55.8	-	64.0	63.5	-	64.0	65.4	-	48.0
Patuakhali	78.7	-	75.0	100.0	-	100.0	100.0	-	100.0	100.0	-	100.0	80.9	-	87.5	89.4	-	95.8
Average	86.8	91.8	94.7	83.0	85.7	92.1	82.9	72.3	84.2	73.3	66.6	77.9	66.I	55.4	71.2	38.6	15.8	46.I

Table 4.12: In absence of multipurposedisaster shelter communitymaymisses the facilities (multiple responses)

Source: Field survey

Table 4.13: Problems faced by household during using of shelter (multiple responses)

Name of				Percenta	ge of household in t	he existing shelter a	rea		
District	Congestion	Broken door	Broken window	No store room facility	Insufficient number of toilet	No separate toilet for women	Unavailability of drinking water	Rainwater drops enter into the shelter	No approach road
Chittagong	92.1	80.3	85.5	92.1	90.8	98.7	85.5	65.8	35.5
Cox's Bazar	94.4	19.7	36.6	85.9	90.1	95.8	93.0	25.4	47.9
Feni	32.5	55.0	52.5	67.5	67.5	52.5	65.0	20.0	5.0
Lakshmipur	100.0	100.0	100.0	100.0	40.0	90.0	-	10.0	10.0
Noakhali	59.8	24.4	26.8	34.1	34.1	52.4	29.3	9.8	11.0
Bhola	95.7	7.2	17.4	47.8	36.2	60.9	47.8	10.1	24.6
Average	79.1	47.8	53.1	71.2	59.8	75.1	64.1	23.5	22.3

4.13 Problems Faced by women at Disaster Shelters

The surveyed respondents mentioned that women face different problems during staying at the disaster shelter. Respondents from the existing shelter area said that women face the various problems such as no separate toilet for men and women (81.4%), no room for child care and feeding (75.2%) and no facility for pregnant women (73.8%) (**Table 4.14**).

Name of District		Parentage of house	hold
	No separate toilet for women	No room for child care and feeding	No facility for caring pregnant women
	Existing shelter	Existing shelter	Existing shelter
Chittagong	98.8	97.5	91.4
Cox's Bazar	97.1	95.7	100.0
Feni	67.5	77.5	57.5
Lakshmipur	100.0	100.0	100.0
Noakhali	70.5	33.3	33.3
Bhola	54.4	47.1	60.3
Barisal	-	-	-
Average	81.4	75.2	73.8

Table 4.14: Problems faced by women at disaster shelter (multiple responses)

4.14 Appropriate use of Disaster Shelter

Survey data reveals that the disaster shelter use as shelter-cum-school (94.9%) and only shelter (5.1%). People from the existing shelter area also stated as shelter-cum-school (85.8%) and only disaster shelter (14.2%) (**Table 4.15**).

Name of District	Percentage of household									
	Only sh	elter	Shelter-cum-School							
	New shelter	Existing shelter	New shelter	Existing shelter						
Chittagong	1.0	-	99.0	100.0						
Cox's Bazar	5.0	5.6	95.0	94.4						
Feni	12.5	20.0	87.5	80.0						
Lakshmipur	-	-	100.0	100.0						
Noakhali	15.8	50.6	84.2	44.4						
Bhola	4.2	4.3	95.8	95.7						
Barisal	-	-	100.0	-						
Pirojpur	3.8	-	96.2	-						
Patukhali	4.0	-	96.0	-						
Average	5.1	14.2	94.9	85.8						

Table 4.15: Expected better use of disaster shelter

Chapter 5: Findings on Access Road of Disaster Shelter

5.1 Access Road to go to Shelter

Under the MDSP, there is a provision of access road and associated structures to the disaster shelters so that the shelters can be accessed safely. This will be very useful for the users particularly students to commute with comfort, particularly during rainy season. Moreover, the new shelter/school building with access road will be constructed at the same premises of the existing education institutions. Newer schools with better access road and improved facilities will promote child education enrolment. New access roads will support a better-connected transportation and emergency network. This will provide more involvement opportunities for income generating activities, increasing livelihood and will generate benefits such as improving the flow of goods and services, even in non-disaster times.

95.7% respondents in the new shelter area and 97.6% respondents in the existing shelter area stated that, there are access roads to go to disaster shelter (**Table 5.1**). In details, for the new shelter areas, 13.8% respondents said that the access roads are a paved road; 27.6% respondents stated that the access roads are HBB (Herring-Bone-Bond) road; and 58.5% respondents reported that the access roads are earthen road. Similarly, for the existing shelter area, 21.6% respondents said that the access roads are a paved road; 30.3% respondents stated that the access roads are HBB road; and 48.1% respondents reported that the access roads are earthen road.

Name of District		Percentage	e of household	
	Ye	S	No	
	New shelter	Existing shelter	New shelter	Existing shelter
Chittagong	100.0	100.0	-	-
Cox's Bazar	100.0	91.5	-	9.5
Feni	100.0	100.0	-	-
Lakshmipur	100.0	100.0	-	-
Noakhali	80.7	100.0	19.3	-
Bhola	95.7	94.3	4.3	5.7
Barisal	86.7	-	13.3	-
Pirojpur	100.0	-	-	-
Patukhali	98.0	-	2.0	-
Average	95.7	97.6	4.3	2.4

Table 5.1: Existence of access road to go to disaster shelter



Figure 5.1: Response on access roads to go to disaster shelter

Source: Field survey

Respondents from Chittagong (100%), Cox's Bazar (100%), Feni (100%), Lakshmipur (100%) and Pirojpur (100%) opined that access roads are available to go to new shelter areas. Correspondingly, respondents from Chittagong (100%), Feni (100%), Lakshmipur (100%) and Noakhali (100%) stated that there is access road to go to existing shelter areas (**Figure 5.1**.

5.2 Inundation of Access Road during Disaster

Significant number of respondents complained that access roads go under water during cyclone and rainy season. 90.5% respondents in the new shelter area and 86% respondents in the existing shelter area mentioned that the access roads drown under water during disaster. However, Lakshmipur and Bhola have more vulnerability than that of others as all the respondents are complaining about it in both new and existing shelter project areas (**Figure 5.2**).



Figure 5.2: Access road goes under water during disaster

5.3 Suffering from Water Logging

During disaster, 65.8% respondents in the new shelter area and 50.7% respondents in the existing shelter area stated that their family suffered from water logging. In the new shelter areas of Barisal, 96.7% respondents opined that their family faced water logging. Besides, Chittagong (78.0%), Cox's Bazar (70.0%), Feni (62.5%), Noakhali (61.4%), Bhola (60.4%), Pirojpur (63.5%) and Patuakhali (48.0%) also faced water logging. Lakshmipur (10%) suffers less water lodging than other new project areas. In the existing project areas, Chittagong (70.0%), Cox's Bazar (43.7%), Feni (12.5%), Lakshmipur (20.0%), Noakhali (32.5%) and Bhola (81.2%) suffers from water logging simultaneously (**Figure 5.3**).





Source: Field survey

5.4 Degree of Water Logging

Present survey also rated that the degree of water logging problem in their daily life. In the new shelter areas, 72.7% respondents said that the water logging problem was serious problem followed by moderate or limited problem (26.3%) and nominal problem (1%). Similarly, in the existing shelter area, 77.6% respondents reported that the water logging problem was serious problem for them, 20.7% said that the problem was moderate impact, and only 1.7% said that water logging problem slightly impact in their daily life (**Table 5.2**).

Name of District	Serie	ous (%)	Mode	rate (%)	Nominal (%)		
	New shelter	Existing shelter	New shelter	Existing shelter	New shelter	Existing shelter	
Chittagong	97.3	100	2.7	-	-	-	
Cox's Bazar	95.3	90.3	4.7	3.3	-	6.5	
Feni	16	60	84	40	-	-	
Lakshmipur	-	50	100	50	-	-	
Noakhali	85.7	74.1	8.6	22.2	5.7	3.7	

Table 5.2: Degree of water logging problem

Bhola	82.7	91.1	13.7	8.9	3.3	-
Barisal	100	-	-	-	-	-
Pirojpur	81.7	-	18.3	-	-	-
Patuakhali	95.7	-	4.3	-	-	-
Average	72.7	77.6	26.3	20.7	1.0	1.7

Source: Field survey

5.5 Areas Suffering from Water Logging

Respondents in the new shelter area, existing shelter area and control area stated that water logging occurred in their locality or surroundings. New shelter area people said that, water logging occurred in the road (94.1%) followed by house (61.3%), other places (9.6%) as well as business place (8.4%). Similarly, existing shelter area people reported that, water logging occurred in their locality in the road (87%) followed by house (49.3%), business place (11.2%) and other places (8.6%) (**Table 5.3**).

Name of District	Roa	.d (%)	Hou	se (%)	Business	place (%)	Other p	lace (%)
	New shelter	Existing shelter	New shelter	Existing shelter	New shelter	Existing shelter	New shelter	Existing shelter
Chittagong	98.0	93.3	86.7	66.7	7.0	7.7	-	2.3
Cox's Bazar	100.0	98.5	39.0	36.9	20.3	15.4	5.1	6.3
Feni	83.3	85.7	83.3	28.7	-	-	16.7	14.3
Lakshmipur	100.0	100.0	96.7	70.0	3.3	10.0	-	-
Noakhali	87.7	61.5	33.3	28.2	7.0	2.7	7.0	11.5
Bhola	87.2	82.7	34.0	65.2	4.3	20.3	-	-
Barisal	95.0	-	80.0	-	-	-	-	-
Pirojpur	100.0	-	17.3	-	-	-	-	-
Patuakhali	95.9	-	81.7	-	-	-	-	-
Average	94.1	87.0	61.3	49.3	8.4	11.2	9.6	8.6

Table 5.3: Locations of water logging (multiple responses)

5.6 Effect of Water Logging on Road

Survey also explores the impact of water logging condition on the road. Respondents in the new shelter area reported that water logging seriously damaged the road (44.5%) followed by pothole on the road (27.2%), partial damage (26.9%) as well as other types of damage (6.4%). Existing area respondents stated that, water logging was impact on the road pothole (37.1%) followed by seriously damaged (35.2%), partial damaged (23.7%) as well as other types of damage (8%) (**Table 5.4**).

Name of District	Serious dai	mage (%)	Partial da	mage (%)	Pothole on	the road (%)	Othe	rs (%)
	New shelter	Existing shelter	New shelter	Existing shelter	New shelter	Existing shelter	New shelter	Existing shelter
Chittagong	59.7	49.7	8.9	18.0	31.5	31.7	-	0.7
Cox's Bazar	42.0	48.3	22.0	24.3	36.0	27.5	-	-
Feni	6.3	4.9	46.3	34.1	40.0	56.I	7.7	4.9
Lakshmipur	23.9	8.3	34.7	8.3	41.3	83.3	-	-
Noakhali	44.1	39.5	42.3	32.9	8.5	9.2	5.1	18.3
Bhola	34.7	60.5	42.3	24.7	23.1	14.7	-	-
Barisal	88.1	-	1.5	-	10.4	-	-	-
Pirojpur	51.9	-	23.1	-	25.0	-	-	-
Patuakhali	50.0	-	20.7	-	29.3	-	-	-
Average	44.5	35.2	26.9	23.7	27.2	37.1	6.4	8.0

Table 5.4: Impact of wate	er logging on road
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Source: Findings of Field survey analysis.

Chapter 6: Findings About Multipurpose Disaster Shelter Project

6.1 Knowledge about MDSP

Respondents were asked if they know about MDSP. Only 27.8% respondents from the new shelter area and 17% respondents from the existing shelter area stated that they heard about the MDSP. Respondents from the new shelter area stated that they heard about MDSP from local NGOs (48.8%) followed by neighbour (37.6%), media like newspaper (35.3%), other sources like mouth-to-mouth (34.4%), and LGED official (26%). Similarly, respondents from the existing shelter area said that they heard about MDSP from other sources like mouth to mouth (58.4%) followed by local NGOs (32.9%), media like newspaper (23.2%), neighbour (19.9%), and LGED officcial (19.9%) (**Table 6.1**).

Name of District	Knowled MDS	ge about P (%)	: Medium of knowledge (%) (multiple responses)											
	Y	es	Nei	ghbour	L	GED	N	IGO	GO Media			Others		
	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing		
	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter		
Chittagong	4.0	8.9	-	25.0	20.0	8.3	-	16.7	60.0	33.3	20.0	16.7		
Cox's Bazar	5.0	11.3	-	10.0	40.0	10.0	60.0	40.0	-	40.0	-	-		
Feni	37.5	20.0	23.8	33.3	4.8	44.4	71.4	11.1	-	11.1	-	-		
Lakshmipur	6.7	-	-	-	-	-	100.0	-	-	-	-	-		
Noakhali	35.1	43.4	10.0	11.1	60.0	16.7	30.0	63.9	-	8.3	-	-		
Bhola	41.7	1.4	21.1	-	5.3	-	-	-	10.5	-	63.2	100.0		
Barisal	16.7	-	91.7	-	8.3	-	-	-	-	-	-	-		
Pirojpur	53.8	-	47.1	-	29.4	-	23.5	-	-	-	-	-		
Patuakhali	50.0	-	32.0	-	40.0	-	8.0	-	-	-	20.0	-		
Average	27.8	17.0	37.6	19.9	26.0	19.9	48.8	32.9	35.3	23.2	34.4	58.4		

Table 6.1: Response on knowledge of MDSP

6.2 Knowledge about the Services of the MDSP

Survey data reveals that only 26.1% respondents in the new shelter area and 15.6% respondents in the existing shelter area have knowledge about the services to be provided by MDSP. In addition, 97.5% respondents in the new shelter area and 89.4% respondents in the existing shelter area reported that the services provided by MDSP would be good and useful (**Table 6.2**).

Name of District	Know abo	ut MDSP (%)	Services of MDSP would be good (%)			
	New shelter	Existing shelter	New shelter	Existing shelter		
Chittagong	4.0	4.4	100.0	75.0		
Cox's Bazar	3.3	9.9	100.0	85.7		
Feni	37.5	20.0	100.0	100.0		
Lakshmipur	6.7	-	100.0	-		
Noakhali	35.1	42.2	100.0	86.1		
Bhola	37.5	1.4	94.7	100.0		
Barisal	16.7	-	-	-		
Pirojpur	44.2	-	85.2	-		
Patuakhali	50.0	-	100.0	-		
Average	26.1	15.6	97.5	89.4		

Table 6.2: Response on the knowledge about MDSP

6.3 Expected quality of access road and perception of outcome of MDSP

Respondents expected that the MDSP would provide access road linking disaster shelter the following quality services: New Shelter- very good 57.2%, good (22.4%), moderate (18.3%), and bad 2.3%; existing shelter area- very good 42.7%, good 51.4%, moderate 5.9 %(**Table 6.3**).

About perception on outcome, new shelter area: very good 37.9%, good 32.6%), moderate 12.4% and bad 17%. In existing shelter area, the opinion is, very good 62.7%, good 29% and moderate 8.6%. (**Table 6.3**).

Name of			Expectat	ion on qual	ity of acce	ss road (%))		Perception on outcome of MDSP (%)							
District	Very	good	G	ood	Mod	erate	E	Bad	Very	good	G	ood	Mod	lerate	В	ad
	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing	New	Existing
	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter	shelter
Chittagong	100.0	75.0	-	25.0	-	-	-	-	100.0	100.0	-	-			-	-
Cox's Bazar	66.7	42.9	33.3	42.9	-	14.3	-	-	33.3	71.4	66.7	28.6	-	-	-	-
Feni	13.3	37.5	13.3	50.0	60.0	12.5	13.3	-	-	12.5	-	50.0	46.7	37.5	53.3	-
Lakshmipur	-	-	-	-	100.0	-	-	-	-	-		-			100.0	-
Noakhali	70.0	58.3	20.0	38.9	5.0	2.8	5.0	-	70.0	66.7	15.0	19.4	15.0	13.9	-	-
Bhola	42.I	-	57.9	100.0	-	-	-	-	52.6	-	47.4	100.0			-	-
Barisal	100.0	-	-	-	-	-	-	-	-	-	50.0	-	50.0		-	-
Pirojpur	63.0	-	37.0	-	-	-	-	-	33.3	-	66.7	-			-	-
Patuakhali	60.0	-	40.0	-	-	-	-	-	52.0	-	48.0	-			-	-
Average	57.2	42.7	22.4	51.4	18.3	5.9	2.3	-	37.9	62.7	32.6	29.0	12.4	8.6	17.0	-

Table 6.3: Expected quality of access road and perception of outcome of MDSP

Source: Findings of the Baseline Survey

Chapter 7: Qualitative Findings

7.1 Summary of the FGD Findings

All the MDSP intervention areas, flood, cyclone, tidal surge, nor'wester, water logging, salinity, heavy rain fall, landslide, earthquake, thunderstorm, tornado generally affect in different seasons. In Bhola, yet a major vulnerable disaster is river erosion. The people of the study area usually take shelter in the local or nearest disaster shelter (educational institutes), embankments, high land and relative house. In Patuakhali, some people use even the mosque. Inhabitants of the Barisal sadar claimed that although they some how can manage their own life safely during disaster, but their livestocks do not have that safety facilities.

During FGD, most of the participant of Chittagong district opined that during disaster, they usually take refuse in the raised houses of their relatives and neighbours with livestock. However, the people of Cox's Bazar district take refuse in the houses of relatives, school, madrassa and embankment. The respondents of Bhola district usually take refuge in the cyclone shelters, primary and high schools, relative's houses of the high land area, mosque and hospitals. The people of Noakhali and Lakshmipur district similarly uses school and high school, the house of relatives and neighbours, school-cum-cyclone shelter and embankment. The respondent of Barisal and Patuakhali districts mostly uses primary and high school, high based house of their relatives, neighbours and mosques.

The access road i n Cox's Bazar, Chittagong, Feni, Noakhali, Barisal, Pirojpur and Patuakhali go under water by 2 to 20 feet during flood and water logging remain for 15 to 30 days. It takes almost 20 to 40 days to drain out the flood water completely. In Bhola and Lakshmipur, sometimes around 2 months are needed to drain out the flood water completely. Existing access roads must be reconstructed above 7 feet higher to avoid water logging. Moreover, most of the access roads are mud made and need paving. In some places, construction of culvert may be necessary.

In the study areas, the minimum time to reach the shelter is around 10 to 20 minutes and the maximum time is 40 to 60 minutes. Pirojpur and Feni are more vulnerable can accommodated only 100 to 150 and 200 to 300 women and children respectively during disaster. Chittagong, Noakhali and Lakshmipur can accommodated around 400 to 500 women and children while Cox's Bazar, Patiya, Sitakunda, Bhola, Patuakhali can accommodated around 700 to 2,000 women and children.

In both the new shelter and existing shelter areas, local community reported that the access roads to go to disaster shelter are constructed on the government land. No private acquired or gifted land were recorded. So, there is no need for land acquisition for constructing new access under the MDSP. Although unlikely, the project at a later stage may like to acquire private lands and/or public land from private uses only at extreme circumstances of unavailability of land through other means. Land, in such circumstances, will be acquired under the Acquisition and Requisition of Immovable Property Ordinance, 1982 of the Government of Bangladesh. The acts, therefore, trigger the World Bank OP 4.12 on involuntary resettlement.

Community people suggested to affoest fruit and timber trees in and around the disaster shelter. Some area people particularly Bhola and Pirojpur urged for fruit trees instead of timber tree. Neither the furniture nor the water supply of the existing shelter is adequate for the affected people. In Chittagong, tube-well goes under water during flood and disaster. It is not feasible to again install tubewell at the groud level. Therefore, community suggested for installing deep tube-well, safety/reserve water tank, facility for rain water harvesting as well as installing electric water pump. Moreover, purifying tablet was much helpful during disaster period.

In Cox's Bazar and Pirojpur districts, existing shelters are not connected to electricity. In other districts, there have electricity however face up to 15 hours load shedding. In all the shelters, no

alternative electric power sources are available. So, the people need to rely on hurricane (lamp) and candle during load shedding. As a result, women do not feel safe inside the shelter and at the time of using toilet at light. Availability of torchlight, generator, solar panel and lamp can be arranged to mitigate the problem.

If the shelter is used as school-cum-shelter, teaching can be given in a separate room. Ensuring child safety and recreational facilities in the shelter can promote the student for education. These shelters must be multi-storied and classes should not be taken on the ground floor. Moreover, safe water supply and toilet facilities increase the children's confidence.

Finally, in the new shelter, draining facilities needs to be concerned and health services should be attached. Announcing facility through miking and siren for early warning system is necessary in each disaster shelter. In Barisal, Pirojpur and Patuakhali, building boundary wall around the shelter is recommended. Establishing community clinic inside the new shelter is suggested. Community also opined to repair the damaged access road as early as possible.

7.2 Summary of the KII Findings

Key informants reported that the average capacity of each shelter was 1,122 people in the new shelter and 700 people in the existing shelter area. People use the disaster shelter from 2 km away.

According to the discussion with the local Chairman and Member of Union Parishads, on average there are 2,038 livestock in each new shelter areas (average 4 livestock per household) and 3,075 livestock in the existing shelter areas (average 8 livestock per household) as they have created more facilities for livestock rearing. Most of the coastal lands are not suitable for paddy cultivation due to high salinity. People of these areas traditionally rear different types of livestock (e.g, cow, goat, sheep) including poultry. In the existing areas Bangladesh Krishi Bank, NGOs and other private credit societies are giving loan for cattle rearing. NGOs, Department of Youth Development and Department of Livestock Services are also giving training regularly to the farmers and providing vaccines supply.

UZ Livestock Officers of the study area reported that in the new shelter areas people faced different types of challenges to protect their livestock during disaster such as no separate room in the shelter, limited space to keep livestock where there have no separate space, tough to safely move from house to shelter, owners have no training to feeding and take care of livestock, and unavailability of food and water for livestock during disaster. Similarly, UZ Livestock Officers reported that existing shelter area people also faced various problems to protect their livestock from a disaster such as no separate room in the shelter, tough to safely move from house to shelter, and unavailability of food and water for livestock during disaster.

75% of the UZ Livestock Officers from the new shelter areas said that in the MDSP there are mitigating options to eradicate the livestock related challenges faced by the community. 25% respondents said that they did not know about it. On the other hand, 100% UZ Livestock Officers in the existing shelter areas mentioned that they did not know about any mitigation option taken in the MDSP to protect livestock from disaster.

45.5% respondents from the new shelter area and 68% respondents from the existing shelter area reported that the nearest shelter can be used for primary school, community centre, market and socio-cultural affairs. However, UZ Education Officers in the new shelter areas stated that disaster shelters will face some problems if it is also used as school like there will be lack of space to run as school, will have insufficient space to accommodate all the students, and very difficult to ensure proper facility of drinking water and sanitation for students. On the other hand, existing shelter area UZ Education Officers' mentioned that there will be lack of space to run as school and may not be possible to ensure proper facility of drinking water and sanitation for students.

UZ Education Officers in the new and existing shelter areas reported that MDSP takes initiative to mitigate the school related problems. Some of them mentioned that they do not know about the MDSP interventions.

Reagrding the importance of the access road to shelters particularly disaster period, KIIs in 86.4% in new shelter areas and 100% in the existing shelter areas informed that the present access road is broken and need to be improved. Regarding bridges/culverts in access roads, 63.6% key inforants in the new shelter areas and 100% in the existing shelter areas stated that there are no needs of bridge or culverts while 36.4% key informants in the new shelter areas reported that the bridge/culvert is necessary (**Table 7.1**).

Question	New shelt	ter (%)	Exisitng shelter (%)			
Present condition of access road to go to	No access road	Broken road	No access road	Broken road		
disaster shelter	13.6	86.4	-	100		
Necessaity of bridge/culvert to go to disaster shelter	No need	Necessary but don't have	No need	Necessary but don't have		
	63.6	36.4	100	-		

Table 7.1: Perception about the access road and bridge/culv	/ert
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Source: Key Informant Interview

All the key informants (100%) in both the new shelter and existing shelter areas mentioned that the MDSP will have no negative impact on the social and ethnic issues. Moreover, the shelter would be no negatively impacted on the livestock resources. All of them (100%) thought that the project would create opportunity to rear livestock because multipurpose shelter can protect them from disasters. In addition, 69.6% respondents in the new shelter areas and 100% respondents in the existing shelter areas reported that the disaster shelters under the MDSP would not be create any business/commerce opportunity for the local people (**Table 7.2**). However, a detail social assessment survey should be done before going to project implementation.

Table 7.2:	Perception	about the	MDSP	interventions
	1 Crocption	about the	IND OI	

Question		New shelter (%)		Exisitng shelter (%)	
	Yes	No	Yes	No	
Scope to establish business or business organization in the shelter	30.4	69.6	-	100	
Expected social and ethnic issues	-	100	-	100	
Expected environmental challenges	-	100	-	100	
Opportunity to increase livestock rearing	100	-	100	-	

Source: Key Informant Interview

All the KII informed that the MDSP will not directly or indirectly impact on the local ecosystem and environment. The environmental impacts of the project are expected to be mostly construction related and limited within the project boundaries. No significant and/or irreversible adverse environmental issues are expected from the construction of small scale infrastructure (**Table 7.2**). However, a detail environmental impact assessment survey should be done before going to implementation of the project. The World Bank's policy on environment assessment (OP/BP 4.01) has been triggered for the proposed operation to ensure that the project design and implementation will be environmentally sound and sustainable.

KII respondents however mentioned that there will be some administrative problem regarding operation and maintenance (O&M) of the access roads and disaster shelters. 58.1% respondents in the new shelter area stated that construction of new shelter will be a matter of concern regarding O&M aspect as there is no separate budget for O&M (**Table 7.3**).

Table 7.3: Opinion about the O&M issue.

O&M issue	Big issue	Medium issue	Small issue	Other issue
New shelter (%)	32.6	7.0	2.3	58.1
Exisitng shelter (%)	25	-	75	-
• • • • • •				

Source: Key Informant Interview

7.3 Findings of the Baseline Survey at a Glance

Issue	Findings for New shelter	Findings for Existing	Findings for Control
		shelter	area
	Socio-Economic C	Condition of the Community	
Number of	497	363	233
surveyed HHs			
Sex of the	Male: 89.6%	Male: 92.3%	Male: 91.1%
respondents	Female: 10.4%	Female: 7.7%	Female: 8.9%
Age group of	18-30: 20.5%	18-30: 19.3%	18-30: 26.6%
respondents	31-40: 24.3%	31-40: 26.7%	31-40: 25.3%
	41-50: 23.7%	41-50: 25.1%	41-50: 20.6%
	51-60: 16.3%	51-60: 18.5%	51-60: 17.6%
	60+: 15.1%	60+: 10.5%	60+: 9.9%
Population in			
MDSP UZs in	22,93	1,200	-
09 districts			
Vulnerable			28.90%
population	28.4	16%	
needing shelter			
in percent			
Vulnerable			
population			
needing	65.26	lacs	-
shelter support			
from survey			
Household head	Male: 98%	Male: 97%	Male: 98%
	Female: 2%	Female: 3%	Female: 2%
Educational	Illiterate: 14.6%	Illiterate: 14.5%	Illiterate: 6.5%
qualification	Can only sign: 13.2%	Can only sign: 13.3%	Can only sign: 14.5%
	Primary: 25.9%	Primary: 24.8%	Primary: 24.7%
	Secondary: 28.1%	Secondary: 29.6%	Secondary: 29%
	Higher secondary: 8.2%	Higher secondary: 9.1%	Higher secondary: 7.5%
	Graduation: 10.1%	Graduation: 8.7%	Graduation: 17.8%
Major	Agriculture: 34.5%	Agriculture: 22.6%	Agriculture: 26.6%
occupation	Small-scale to medium	Small-scale to medium	Small-scale to medium
	business: 23.1%	business: 14.6%	business: 26.7%
	Service: 13.3%	Service: 8.9%	Service: 16.9%
	Day labour: 8.6%	Day labour: 7.3%	Day labour: 10.5%
Duration of	More than 5 years: 99.6%	More than 5 years: 98.2%	More than 5 years: 99.4%
living in the area	Less than I year: 0.3%	Less than I year: 0.4%	Between 1-5 years: 0.6%
	Between 1-5 years: 0.1%	Between 1-5 years: 1.4%	
House	Living in own house: 98%	Living in own house: 95.8%	Living in own house: 99.2%
ownership	Not owned the house: 2%	Not owned the house: 4.2%	Not owned the house: 0.8%
Type of	Kancha: 52.7%	Kancha: 53%	Kancha: 68.1%
structure	Semi-pucca: 34.1%	Semi-pucca: 35.6%	Semi-pucca: 24.3%
	Pucca: 12.1%	Pucca: 7.2%	Pucca: 8.6%
	Others: 32.6%	Others: 8.4%	Others: 8.4%
HH sanitation	Sanitary: 61.1%	Sanitary: 71.2%	Sanitary: 57.7%
	Kancha/open: 38.5%	Kancha/open: 28.6%	Kancha/open: 42.3%
	Others: 0.4%	Others: 0.2%	
HH lighting	Electricity: 55.4%	Electricity: 69.5%	Electricity: 60.7%

Issue	Findings for New shelter	Findings for Existing	Findings for Control
		shelter	area
source	Lamp: 10.9%	Lamp: 14.8%	Lamp: 16.3%
	Solar: 37.3%	Solar: 21.1%	Solar: 43.7%
	Others: 5.3%	Others: 3.1%	Others: 6.3%
HH mean income (last 12 months)	BDT: 177,663.00	BDT: 194,441.00	BDT: 139,689.00
HH mean expenditure	BDT: 167,264.00	BDT:179,695.00	BDT: 135,684.00
(last 12 months) HH poverty			
status (Population	28.	.46	28.90
below national			
poverty line)	Existing Protoctio	n Moasuros against Disastor	
Passivad		Voci 24.2%	Voc: 12.9%
Training on Disaster Risk Reduction	No: 78.6%	No: 75.8%	No: 86.2%
Training	CPP: 50%	CPP: 34%	CPP: 13.7%
imparted by	NGOs: 67.3%	NGO: 57.5%	NGO: 35%
, ,	Others: 28.8%	Others: 48.9%	Others: 69%
Disaster shelter centre used	-	75.2%	-
Satisfaction on	-	Satisfied: 11.8%	-
the use of		Accessible: 82.2%	
existing shelter		Adequate facilities: 38%	
		Enhance the adequate	
		capacity for people: 72.4% Safety: 33.8%	
Dissatisfaction	-	Dissatisfied: 88.2%	-
on the use of		Inaccessible: 66.7%	
existing shelter		Inadequate facilities: 95.6%	
Multipurpose	-	Yes=66.1%	-
uses of existing		No= 14 3%	
shelter		Don't know: 20.7%	
Availability of	88.7%	95%	90.5%
Early Warning System			
Sources of Early	Radio: 15.2%	Radio: 11.8%	Radio: 16.3%
Warning System	TV: 39.7%	TV: 43.6%	TV: 44.7%
	Mobile network: 28.7%	Mobile network: 25.6%	Mobile network: 27.3%
	Others: 18.1%	Others: 23.6%	Others: 17.7%
	Do not received: 7.4%	Do not received: 3.1%	Do not received: 7.1%
Effectiveness of	Very effective: 79.1%	Very effective: 76.3%	Very effective: 90.8%
the early	Somewhat effective: 20.4%	Somewhat effective: 21.5%	Somewhat effective: 8.6%
warning system	Not effective: 0.6%	Not effective: 2.3%	Not effective: 0.7%
Shelter of	Cow shed: 46.4%	Cow shed: 30.3%	-
livestock during	Embankment: 35.1%	Embankment: 37.2%	
disaster	Killa: 26%	Killa: 14.7%	
	Disastan abaltan 11 (%	Disector chalter 27.7%	
Dialas das 1	Disaster shelter: 11.6%	Disaster shelter: 27.7%	Family life states 00.2%
KISKS during	ramily lite risks: 78.3%	ramily life risks: 74%	ramily life risks: 98.2%
absonce of	LOOSING IIVESTOCK: 70.3%	LOOSING IIVESTOCK: 83.1%	LOOSING IIVESTOCK: 87.5%
absence of	LOOSING MOREY: 10%	LOOSING MONEY: 00.0%	LOOSING MONEY: 03%

Issue	Findings for New shelter	Findings for Existing	Findings for Control
		shelter	area
multipurpose	Damaging clothes: 78.5%	Damaging clothes: 67.5%	Damaging clothes: 81.3%
shelter	Loosing households assets:	Loosing households assets:	Loosing households assets:
	71.5%	64.2%	70.4%
	Loosing jewelleries: 56%	Loosing jewelleries: 46.6%	Loosing jewelleries: 63%
	Damaging educational	Damaging educational	Damaging educational
	Do not have any risks:	Do not have any risks:	materials: 79%
	39.5%		48.6%
Problems faced	-	Congestion: 79 1%	-
in existing		Broken door: 47.8%	
shelter		Broken window: 53.1%	
		No store room: 71.2%	
		Insufficient toilet: 59.8%	
		No separate toilet for	
		women: 75.1%	
		Unavailability of drinking	
		water: 64.1%	
		Kain water drops enter in	
		No approach road: 22.3%	
Problems faced	_	-No separate toilet 81 4%	_
by women in	_	No room for child care and	_
existing shelter		feeding: 75.2%	
		No facility for caring	
		pregnant women: 73.8%	
Appropriate use	Only shelter: 5.1%	Only shelter: 14.2%	-
of disaster	Shelter-cum-school: 94.9%	Shelter-cum-school: 85.8%	
shelter			
	Access Roo	ad of Disaster Shelter	
Presence of	Yes= 95.7%	Yes = 97.2%	-
access road	No=4.3%	No= 2.4%	
Types of access	Haved road: 13.8%	Haved road: 21.6%	-
TOad	Farthen road: 58 5%	Farthen road: 48 1%	
Inundation of	Yes= 90.5%	Yes= 86%	-
Access road	No= 9.5%	No= 14%	
during disaster			
0			
Water logging	Yes= 65.8%	Yes= 50.7%	-
problem	No= 34.2%	No= 49.3%	
Degree of water	Serious: 72.7%	Serious: 77.6%	-
logging problem	Moderate: 26.3%	Moderate: 20.7%	
	Nominal: 1%	Nominal: 1.7%	
Imapct of water	Serious damage: 44.5%	Serious damage: 35.2%	-
logging on road	Partial damage: 26.9%	Partial damage: 23.7%	
	Others: 6.4%	Others: 8%	
Findings on MDS	SP Implementation		
Knowledge	Yes: 27.8%	Yes: 17%	-
about MDSP	No: 72.2%	No: 83%	
Source of	Neighbour: 37.6%	Neighbour: 19.9%	-
knowledge	LGED: 26%	LGED: 19.9%	
	NGOs: 48.8%	NGOs: 32.9%	
	Media: 35.3%	Media: 23.2%	
	Other sources: 34.4%	Other sources: 58.4%	
Necessity of	Yes: 97.5%	Yes: 89.4%	-
ITID5P	INO: 2.5%	INO: 10.6%	

Issue	Findings for New shelter	Findings for Existing	Findings for Control
intervention		Shercer	aica
Porcoption on	Vory good: 57.2%	Vary good: 42.7%	
	C = + 22.4%	C = = + 5 + 4%	-
the use of	Good: 22.4%	Good: 51.4%	
access road	Moderate: 18.3%	Moderate: 5.9%	
	Bad: 2.3%		
Perception as	Very good: 37.9%	Very good: 62.7%	-
use of shelter	Good: 32.6%	Good: 29%	
cum school	Moderate: 12.4%	Moderate: 8.6%	
	Bad: 17%		

7.4 Issues and Concerns

During the process of survey, the following issues and concerns were expressed by the respondents:

- 1. Still lack of shelters within accessible distances
- 2. Many of the households would prefer to take risk and stay at home to protect/secure their properties.
- 3. Ensuring availability of salt free water for drinking and other purpose
- 4. Arrangements for providing cooked food during disasters
- 5. Separate shelter space for men, women, handicapped people etc.
- 6. System ensuring arrangements of confirmed lighting
- 7. Separate toilets for men and women
- 8. Shelters for livestock and animals have been expressed as required by the community. Many indicated that they merely kept their livestock at home or bring them to higher ground like the top of the embankment which still expose these animals to risk and danger.
- 9. Uninterrupted and proper schooling arrangement during construction
- 10. Proper arrangements need be made so that schools do not suffer from noise/ dust pollution
- 11. The access roads to school cum shelters should constructed above flood level
- 12. The access roads should be constructed with adequate cross drainage bridges and culverts
- 13. Arrangements for proper Operation and Maintenance of the shelters

Chapter 8: Conclusion and Recommendations

Based on the analysis of the results of secondary data collection, household survey, focus group discussions, and field observations, the following conclusions and recommendations can be derived.

1) The study established the baseline information for the key performance indicators for regular tracking of Project inputs, outputs and outcome. These baselines are also necessary for the effective Project Impact Evaluation. These are indicated in the MDSP Monitoring and Evaluation Framework – Matrix of Outcome and Outputs from which target values of indicators are generally based. In the implementation of the Project, the attainment of the targets should be given necessary consideration in order to enhance the achievement of the PDO.

2) This early in the program implementation, monitoring and evaluation findings, through this baseline study, have identified concerns and issues that should be addressed. It is recommended that these concerns and issues be carefully considered and corrective measures instituted.

3) Early on in the implementation if there is the need to institute changes and strategy reformulation, policy makers and program implementers should never hesitate to do so primarily in the interest of the vulnerable target beneficiaries.

4) It is proposed that, in addition to planning for the infrastructure measures, the importance of properly managing and maintaining what has already been constructed should not be overlooked.

5) Shelter management in order to be effective and workable needs to be planned not only at the LGED and SMC level but should ensure the close participation of the target community. First and foremost is the need for information dissemination and sharing and eventually the participation in planning and implementation for pre-, during and post disaster scenarios. Even if the MDSP interventions provide enhanced facilities as shelters and connecting roads as also logistics support for school functioning, the people at the ground level especially those for whom the facilities have been provided should know the program without which it will have minimal benefit and impact.

6) Availability of disaster warning system was found high both in the newly constructed and old shelter areas. Most people mentioned that they receive warning messages from the mobile phone network, television, radios, etc. Overall, the cyclone shelters appeared as a very effective tool to protect lives and property of the vulnerable people.

7) According to the baseline survey, the number of vulnerable population in the target districts needing shelter has been estimated at 65.26 lac. Per PAD information, present available support exist for 37.10 lac and MDSP will provide shelter to another 12.37 lac number of vulnerable people. This indicates that there is still need to construct additional shelters beyond the MDSP target to provide shelter to more vulnerable people.

8) Emergency medical facilities should be provided for the people taking shelters.