

Indigenous methods on coping with natural disasters in selected areas of Bangladesh

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Abstract: The study focused the state of integration of local people's wisdom and their indigenous methods in mitigating disaster in selected areas of Bangladesh. It revealed that integration of local people's wisdom and indigenous methods with Comprehensive Disaster Management Program (CDMP) of the government is below the expected level. For coping with natural disaster, demand for external help is still dominant in people's mind set. Community Based Disaster Management (CBDM) approach is not getting adequate attention by people, government and NGOs. Official traditional top down Disaster Management (DM) approach of only rescue & relief was found dominant in the 16 sample Union Parishads in Bangladesh. There were limitations of cyclone shelter centers in respect of site, size, number, quality, water facility, sanitation, security, cattle shade, multipurpose use, ownership, maintenance and longevity. Caretaking and maintenance work arrangement for most of the cyclone shelter centers were found almost absent. For establishing CBDM with development dimension, local people's wisdom, indigenous methods, local community organizations and Local Government Institutions (LGIs) i.e. *Union Parishad* (UP) and *Upazila Parishad* (UZP) may be integrated with the DM process. As an alternative of constructing traditional low quality cyclone shelter centers of short longevity in future, government's subsidized multistoried cooperative housing estates similar to the cooperative housing society in urban areas of Bangladesh, may be constructed gradually for the middle class, poor and vulnerable people providing them long term bank loans at very low interest rate in coastal areas supported by the opportunity of long term loan repayment schedule at monthly thrift installments.

Key words: Indigenous methods, coping strategy, natural disasters, Bangladesh.

Introduction

A proverb says, "Farming without tree culture is Disaster refers to sudden or progressive natural events that seriously disrupt the functioning of a society causing human, material and environmental losses of such severity that the affected community has to respond by taking exceptional measures. The disruption, including essential services and means of livelihood, is on the scale that exceeds ability of the affected community to cope with using only its own resources. Natural disaster proneness of Bangladesh is due to frequent cyclone, storm surge, flood, tornado, drought and arsenic contamination. From 1797 to 1998, 67 major cyclone storms and storm surges have been reported to occur in Bangladesh (Alimullah, 2005; Anon. 2011).

Major Natural Disasters in Bangladesh during 1970-2009

Year	Disaster	Estimated Death of people
1970	Cyclone	470,000
1974	Flood	-
1988	Flood	2373
1988	Cyclone	5704
1989	Drought	800
1991	Cyclone	138,882
1996	Tornado	545
1997	Cyclone	550
1998	Flood	981
2004	Flood	747
2007	Flood	800
2007	Cyclone	3,406
2009	Cyclone	190

There is a paradigm shift in disaster management from traditional approach of rescue & relief towards developmental approach incorporating hazard mitigation and vulnerability reduction during warning phase, disaster phase and recovery phase. Thus Disaster Management (DM) refers to management of both risk and the consequences of disasters, includes both prevention and preparedness measures in anticipation of known hazards (pre-disaster) and long-term rehabilitation (post-disaster reconstruction). Government of Bangladesh (2003) has introduced Comprehensive Disaster Management Program (CDMP) in 2003 in partnership with DFID, UNDP and

EU. According to the Yokohama Resolution in 1994, traditional top down approach of DM failed to address the specific local needs of vulnerable communities, ignore the potential of local capabilities and resources. But local community is the first to respond any disaster. Yokohama Resolution put thrust on Community Based Disaster Management (CBDM) approach. CBDM approach has been recognized internationally as an alternative way of DM. It involves Local Government Institutions (LGIs), Non-Government Organizations (NGOs) and Community Based Organization (CBOs) in DM. It seeks to develop and implement locally "appropriate" and locally "owned" strategy for DM (Yokohama Strategy and Plan of Action for a Safer World, 1994).

In the above background the objective of the study was to find out the state of integration of local people's wisdom and local people's indigenous methods of coping with disaster to CDMP of the government at selected areas in Bangladesh.

Materials and Methods

Sixteen Focus Group Discussions (FGDs) were conducted with 16 sample *Union Parishads* (UPs) at respective UP Complexes. Out of 16 sample Unions, 10 were from natural disaster prone coastal districts and the rest 6 were from non-coastal districts. There were a total of 194 participants in the 16 FGDs. There were maximum 14 and minimum 8 participants in the FGDs. FGD participants were UP Chairmen, UP Members and UP Secretaries. The sample Unions were selected purposively from natural disaster prone coastal districts and non-coastal districts (Table 1).

Observations and Analysis:

Frequent natural disaster caused loss of lives, livelihoods and living conditions of disaster prone coastal areas. Department of Disaster Management (DDM) of the government of Bangladesh has District Disaster Management Committee (DDMC); *Upazila* Disaster Management Committee (UZDMC); Union Disaster Management Committee (UDMC); and 33,000 Volunteers covering 30 *Upazilas* of 11 disaster prone coastal districts. Yet the role of scattered indigenous measures was found

dominant considering quantity, quality and sustainability.

Official disaster management efforts were very much inadequate considering quantity, quality and sustainability.

Table 1. Study Area and number of FGD participants

No. of FGD	Date of FGD	UP Offices of FGD	Upazila	District	No. of FGD participants
01	17.07.12	Char Kolmi	Char Fashion	Bhola	10
02	18.07.12	Awazpur	Char Fashion	Bhola	08
03	24.07.12	Betagi Shankipur	Dashamina	Patuakhali	14
04	23.07.13	Dashamina Sadar	Dashamina	Patuakhali	12
05	01.08.12	Noon Khawa	Nageshwari	Kurigram	14
06	02.08.12	Hashnabad	Nageshwari	Kurigram	10
07	09.08.12	Magura	Kishoregonj	Nilphamari	13
08	08.08.12	Garagram	Kishoregonj	Nilphamari	08
09	05.08.12	nolpha	Raigonj	Shirajgonj	14
10	05.08.12	Dhangora	Raigonj	Shirajgonj	14
11	29.07.02	Veempur	Mohadevpur	Nowgaon	11
12	29.07.12	Uttargram	Mohadevpur	Nowgaon	14
13	16.07.12	Dorajhat	Bagharpara	Jessore	14
14	15.07.12	Dohakula	Bagharpara	Jessore	13
15	22.07.12	Firojpur	Meherpur Sadar	Meherpur	12
16	22.07.12	Kutubpur	Meherpur Sadar	Meherpur	13
-	-	-	-	Total	194

Results and Discussion

The deadliest cyclone in the history of Bangladesh caused deaths of 470,000 human being and innumerable cattle & poultry birds in 1970 in the coastal areas of Bhola, Putuakhali and Noakhali districts including six places of the sample area of this study. Cyclone also occurred at six places under this study area in 2012 causing several deaths of human lives and massive deaths of livestock and poultry. Those cyclones destroyed crops and many houses of the people. Tidal bore occurred at four places of the study area in 1988, 1996, 2007 and 2008 which destroyed crops. Floods in 1996, 1998 and 2012 caused damages of crops and houses of people at six places under the study area (Table 2).

Table 2. Natural Disasters occurred in the study area

Sl. No.	Name of disaster	Year of disaster	No. of place of disaster
1	Cyclone	1970, 2012	6
2	Tidal bore	1988, 1996, 2007, 2008	4
3	Flood	1996, 1988, 2012	6
-	-	Total	16

Due to the above mentioned disasters, most of the low cost houses were damaged at 100% places; crops were destroyed severely at 81% places; many cattle and poultry birds died or lost at 75% places; roads, bridges, culverts and ferry were affected or destroyed at 63% places; and many herbs, shrubs and trees were destroyed at 50% places. Other impacts of disaster were- saline water submerged crop lands; all fishes washed away from fish ponds; some people died and injured; people's living conditions disrupted; seed beds destroyed severely; affected electricity supply infrastructure; mango garden and banana plantation were affected severely; jute and sugarcane cultivation affected severely; school, college and other educational institutions affected; and diseases broke out (Table 3).

Table 3. Impact of disaster on living condition and production

Sl. No.	Impacts	No. of places of incidences	%
01	Most of the low cost houses were damaged	16	100
02	Crops were destroyed severely	13	81
03	Many cattle and poultry birds died and lost	12	75
04	Roads, bridges, culverts, and ferry were affected or demolished	10	63
05	Many herbs, shrubs and trees were destroyed	08	50
06	All fishes washed away from fish ponds	04	25
07	People died and winded	04	25
08	Electricity supply infrastructure were affected	04	25
09	Diseases broke out	03	19
10	Mango garden and banana plantation were affected severely	03	19
11	Jute and sugarcane cultivation were affected severely	03	19
12	School, college and other educational institutions were affected	03	19
13	Saline water submerged crop lands	02	13
14	People's living conditions were disrupted	02	13
15	Seed beds were destroyed severely	01	6
16	Betel leaf cultivation was affected severely	01	6

As indigenous measures for coping with disaster and damages mentioned above, people themselves reconstructed low cost houses by helping each other at 75% places; resumed agriculture by themselves at 50% places; planted trees at 44% places; resumed cattle and poultry rearing themselves at 38% places; repaired & reconstructed roads, bridges and culverts at 31% places under this study areas through people's participation. People's other indigenous measures for coping with disaster were resumed fish culture in ponds; removed

water logging to rescue some crops; took loan for housing, agriculture, fishery and cattle rearing; repaired barrage and cyclone shelter center through people's participation; mutually arranged medical treatment for each other; resumed betel leaf, banana and mango cultivation; provided post disaster food, shelter and some other goods to affected neighbors temporarily; repaired educational institutions by people's participation; and a few people migrated to other places as daily labor (Table 4).

Table 4. People's indigenous measures for coping with disaster

Sl. No.	Indigenous measures	No. of places of such measures	%
01	Reconstructed low cost houses by helping each other	12	75
02	Resumed agriculture by themselves	08	50
03	Planted trees	07	44
04	Resumed cattle and poultry rearing	06	38
05	Reconstructed and repaired roads, bridges and culverts	05	31
06	Took loan for housing, agriculture, fishery and cattle	04	25
07	Left houses for cyclone shelter centers and stayed there	03	19
08	Resumed fish culture in ponds	03	19
09	Mutually arranged medical treatment for each other	02	13
10	Provided post disaster shelter to affected neighbors temporarily	02	13
11	Provided food and other goods to affected neighbors	02	13
12	Removed water logging to rescue some crops	01	6
13	Repaired barrage by people's participation	01	6
14	Repaired cyclone shelter center by people's participation	01	6
15	Resumed betel leaf cultivation	01	6
16	Resumed mango gardening and banana cultivation	01	6
17	Repaired educational institutions by people's participation	01	6
18	Migrated to other places as daily labor	01	6

As measures taken by government organizations, local government institutions and NGOs for coping with disaster, food and some other materials were distributed among the victims as relief at 69% places of the affected areas. It was followed by distribution of cash money as financial grant to the victims at 44% places of the study areas. Corrugated iron sheets were distributed among the

victims at 25% places of the study area as relief for housing. Such other official supports include distribution of seeds, fertilizers, credit, subsidy, clothing, utensils, VGD and VGF cards, latrine making materials and hand tube wells as relief to the victims at a few places of the study area (Table 5).

Table 5. Measures taken by government, local government and NGO for coping with disaster

Sl. No.	Measures	No. of places of such measures	%
01	Distributed food and other relief materials	11	69
02	Distributed taka as financial help	07	44

03	Distributed corrugated iron sheet as relief for housing	04	25
04	Interest free agricultural credit distribution	03	19
05	Provided medical treatment and medicine	03	19
06	Distribution of clothing as relief	03	19
07	Given seeds and fertilizer to farmers free of cost	02	13
08	Distributed utensils as relief	02	13
09	Latrine material and Hand Tube Well distribution	02	13
10	Resumed electricity supply	01	6
11	Provided agricultural subsidy	01	6
12	Provided medical treatment to cattle	01	6
13	Implemented rehabilitation measures	01	6
14	Plantation	01	6
15	Construction of barrage and sluice gate	01	6
16	Roads and bridges construction	01	6
17	VGD and VGF card distribution	01	6

Out of 16 sample Unions only five had cyclone shelter centers. The highest proportion of the respondents (63%) expressed their need for construction of cyclone shelter at each ward and house building materials as relief. Victims of 50% places of the study area demanded construction of barrage and sluice gate and re-excavating rivers and canals. Victims of 44% places demanded financial help as part of rehabilitation. Some other demands of the victims include training the people on coping with disaster and giving early signal; disbursing interest free loan to affected

people; supplying emergency food and medical services to affected people after disaster (Table 6).

Majority of the respondents did not make any comment about the advantage of cyclone shelter centers. As advantages of cyclone shelter center, only 25% respondents opined that people can take shelter during disaster, 19% said that cattle and poultry birds may be kept during disaster, a few others said that cyclone shelter centers may be used as schools and voting centers during election (Table 7).

Table 6. Needs of external help for coping with natural disaster

Sl. No.	Measures	No. of places proposed such measures	%
01	Constructing cyclone shelter center at each ward	10	63
02	Giving house building materials to affected people as relief	10	63
03	Constructing barrage and sluice gate and excavating rivers and canals	08	50
04	Giving financial help to affected people	07	44
05	Training people on coping with disaster and giving early signal	05	31
06	Disbursing interest free loan to affected people	04	25
07	Supplying emergency food and medical services to affected people after disaster	03	19
08	Employing disaster management workers with honorarium	02	13
09	Distributing adequate quantity of relief to affected to people	02	13
10	Improving road communication infrastructure	02	13
11	Constructing some high land for shelter of people and cattle	02	13
12	Ensuring adequate transport facility during disaster	02	13
13	Compensating crop loss	01	6
14	Giving subsidy to farmers of sugarcane, banana, mango, and betel leaf	01	6
15	Giving seeds and fertilizer free of cost	01	6
16	Distributing seedlings free of cost	01	6
17	Supply of tube well and latrine materials to people	01	6
18	Increasing allocation of resource for coping with disaster	01	6

Table 7. Advantages of cyclone shelter center

Sl. No.	Advantages	No. of places mentioned such advantages	%
01	People can take shelter during disaster	04	25
02	Cattle and poultry birds may be kept during disaster	03	19
03	School can be operated at cyclone shelter center	02	13
04	Cyclone shelter center may be used as Vote Center	01	6

Majority of the respondents did not make any comment about the problems associated with cyclone shelter centers. A few of them opined that only one cyclone shelter center per Union can accommodate only 30% people approximately; number of latrine was inadequate; there was drinking water shortage due to lack of tube well; lack of electricity connection; no room for keeping cattle

and poultry birds; people had to take shelter at school buildings or other people's buildings during disaster due to lack of cyclone shelter center; stairs of cyclone shelter centers were not suitable to be used by handicapped and old persons; quality of construction of cyclone shelter centers was poor; and cyclone shelter centers were not

convenient to the people due to absence of maintenance work of cyclone shelter centers (Table 8).

Table 8. Problems associated with cyclone shelter center

Sl. No.	Problems associated	No. of places mentioned such advantages	%
01	Number of latrine is inadequate	02	13
02	Drinking water shortage due to lack of tube well	02	13
03	Lack of electricity connection	02	13
04	No room for keeping cattle and poultry birds	02	13
05	Only one cyclone shelter center per Union can accommodate only 30% people	01	6
06	People have to take shelter at school buildings or other people's buildings during disaster due to lack of cyclone shelter center	01	6
07	Stares of cyclone shelter centers are not suitable to be used by handicapped and old persons	01	6
08	Quality of construction of cyclone shelter centers was poor	01	6
09	Taking shelter at cyclone shelter center is not convenient to people due to absence of maintenance work of cyclone shelter centers	01	6

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Traditional top down DM approach of only rescue & relief is still dominant in the study areas. Such supports are inadequate against the huge demand. Development oriented sustainable efforts for coping with disaster is still missing. Integration of local people's wisdom and indigenous methods with CDMP of the government is below the expected level. For coping with natural disaster, demand for external help is still dominant in people's mind set. CBDM approach is not getting adequate attention by people, government and NGOs.

For establishing CBDM with development dimension, local people's wisdom, indigenous methods, local community organizations and Local Government Institutions (UP and UZP) may be integrated with the DM process. As an alternative of constructing traditional low quality cyclone shelter centers of short longevity, government's subsidized multistoried cooperative housing estates similar to the cooperative housing society in urban areas of Bangladesh, may be constructed gradually for the

middle class, poor and vulnerable people providing them long term bank loans at very low interest rate in coastal areas supported by the opportunity of long term loan repayment schedule at monthly thrift installments (Dasgupta, *et al.*, 2011). Earthen platforms (*matir killa*) may be made for pre-disaster and during disaster shelter of the poultry birds and cattle of people in the similar way adjacent to the recommended cooperative housing. A law may be enacted so that the rich of the coastal areas become bound to construct own multistoried houses for themselves and as shelters for some neighbors during disaster. If necessary the government may provide the rich with low cost bank loans. International and national development partners may support the recommended cooperative housing programs for the poor and middle class people.

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