



Housing Condition of Coastal Area in Bangladesh: A Case Study of Kutubdia, Cox's Bazaar

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Abstract: The study attempts to show the present condition of housing and house making behavior of coastal area at Kutubdia in Cox's Bazaar District. The housing condition of Kutubdia was weak, vulnerable and faced great loss during disaster. The people of Kutubdia had no knowledge about disaster resilient housing and the financial problem also played a vital role in increasing vulnerability of housing condition. The data for the study area were collected from primary and secondary sources. The result of the study showed that 94.67% houses of coastal area Kutubdia were katcha type which was made by tin+mud, tin+bamboo, tin+wood, straw+wood and rest of houses were *Pucca* (1.96%) and *Semi-pucca* (3.37%). There had no remarkable change in housing structure from 1981 to 2010. Due to poverty and illiteracy, 88.96 % people could not repair their houses. Loan facilities and training program on house building and disaster preparedness were very limited. As a whole, the people of coastal area (Kutubdia) were at risk to disasters.

Key Words: Housing condition, Coastal area, Kutubdia, Cox's Bazaar.

Introduction

Coastal area of Bangladesh is mainly plain low land with some offshore islands. It plays a formidable role in the economy and ecological setup of the country. In addition to vast resources, the region also considered as the country's most disaster prone area. People of that area are facing destructive cyclone, tidal surge, erosion, salinity intrusion and future threats from sea level rise and tsunami. Economically people of that area are involved primarily in fishing, salt cultivation, agriculture activities and other activities. Being a vulnerable area, the large majority of the coastal people are poor and their housing conditions are also vulnerable due to regular hit by disaster mostly cyclone at one hand and deteriorating economic condition on the other. People in Kutubdia are losing colossal lives and property from mutinous disaster. Cyclone hit these coastal areas from the historical records. It can be seen that there are two peaks (the month of April- May (pre- monsoon) and another is October- November (post-monsoon) in the annual distribution of the tropical cyclone in the Bay of Bengal. From 1891- 1990 about 700 cyclones occurred in the coastal areas (*shamsujoha, 2007*). In 1991 cyclone, 131000 to 139000 people died with the majority of those dying being below the age of 10 and one third of them below the age of five and the death of women outnumbered by man (*Talukder and Ahmed, 1992*). An estimate, about 1 million houses completely destroyed and further 1 million damaged (*kausher et.al., 1996*).

The housing structure is changing gradually but the structure is different from zones to zones. In the village area, the percent of Katcha houses was 82.32% and in urban area it was 47.67% in Bangladesh (*BBS, 2001*). Among the coastal districts, Cox's bazaar has more *katcha* houses than any other districts of Bangladesh. Cox's Bazaar Sadar and Teknaf are different from other upazila of Cox's Bazaar Districts. Housing condition in Kutubdia is a miserable one the rate of *katcha* houses was 95.90 %, semi- pucca was 2.49% and pucca was only 1.60% (*BBS, 2001*). The present study, therefore, focus as the housing condition of the coastal region particularly Kutubdia island and thereby to see the various problems they faced when cyclone hit the island. The specific objectives of this research were: a) to show the housing condition & house making behavior of the people; b) to detect the changing pattern of housing of coastal area;

Study Area

The study area was confined coastal island of Kutubdia upazila in Cox's Bazaar District. The Upazila occupies an area of 2491.86 sq. kms. It is located between 21 ° 43' N to 21 ° 56' N latitude and between 91 ° 50' E to 91 ° 54' E longitude. (*BBS, 2001*). The upazila is bounded to the north by Banskhalia Upazila of Chittagong Zila to the east by Banskhalia, Chakeria and Maheskhalia on the south and to the west by the Bay of Bengal. The entire island is a very flat topology where a wide range of natural hazard are seen active such as cyclone, storm surge, tidal surge, coastal erosion, saline water intrusion etc.

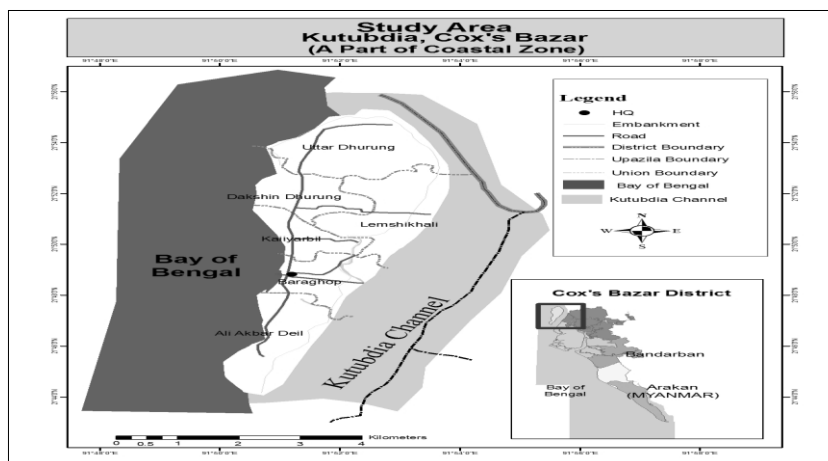


Fig 1: Location of the Study Area Kutubdia, Cox's Bazar

Materials and Methods

The study was based on primary data through pre-tested standardized structural questionnaire for quantitative analysis. Data were collected from randomly selected 300 households (Table 1) living at

coastal area at Kutubdia in Cox's Bazaar District. Households were selected from all unions of different house structure, occupation group and income so that a complete picture of the island could be focused.

Table 1. Sample of Households by Union

Unions	Sample Size	Percent
Ali Akbar Dail	70	23.33
Lamshikhali	50	16.67
Uttaar Durang	50	16.67
Daksin Durang	40	13.33
Kairbill	30	10.00
Baroghop	60	20.00
Total	300	100.00

Source: Field Survey, 2010

In addition, relevant secondary information on houses from various sources such as – statistics, reports, articles and census documents etc. were also reviewed and analyzed. Secondary data were collected from various organizations like DRTMC (Disaster Research and Training Managing Center), BBS (Bangladesh Bureau of Statistics), BUET (Bangladesh University of Engineering of Technology), ISRT (Institute of Statistical Research

& Training), and BIDS (Bangladesh Institute of Development Studies).

Results and Discussions

Housing Condition of Coastal Area (Kutubdia)

In 1981, Kutubdia had 0.65 % *pucca*, 0.46% *semi pucca* houses and 98.89 % *katcha* houses (BBS, 1981). Based on field survey 2010, the rate of *pucca* houses were 1.96%, *semi- pucca* houses were 3.37 % and *katcha* houses were 94.67 % (Table 2).

Table 2. Houses Structure at Kutubdia by Time in Percent

House Type	1981	1991	2001	2010
Pucca	0.65	1.01	1.60	1.96
Semi pucca	0.46	1.78	2.50	3.37
Katcha	98.89	97.21	95.90	94.67

Source: BBS 1981, 1991, 2001 and Field Survey, 2010

From the Table it can be observed that the *pucca* and *semi pucca* house structure was increasing gradually but the *katcha* house structure was decreasing at study area from 1981 to 2010.

Structure of Houses

In year 2010, 94.67% houses were *katcha* in Kutubdia where as 26.84% houses were *jhupri* (very poor standard houses). Among the *katcha* houses 37.36%

houses which were made up with straw+mud, 6.03% houses made up with tin+bamboo, 20.79% made up with tin+mud and 37.36% made up with straw+mud

remain in study area (Table 3). Only 1.96% houses were pucca type.

Table 3. The Structure of Houses of the Respondents

Structure	In yr 2010 (%)	30 yrs ago (%)
Pucca	1.96	0.64
Semi- pucca	3.37	0.64
Katcha(tin+wood)	3.65	1.92
Katcha(tin+bamboo)	6.03	9.62
Katcha(tin+mud)	20.79	16.66
Katcha(straw+mud)	37.36	32.38
Jhupri	26.84	38.14
Total	100.00	100.00

Source: Field Survey, 2010

Ownership Pattern of Houses

Generally, people get their houses from father or inherited. About 81.0 % people were living through generation and got ownership. But a small portion of living people (15%) who had come from outside

Kutubdia had to buy land from others on the purpose of building houses or settlement. They were living separately from their extended family for lacking of house building area. (Figure. 2)

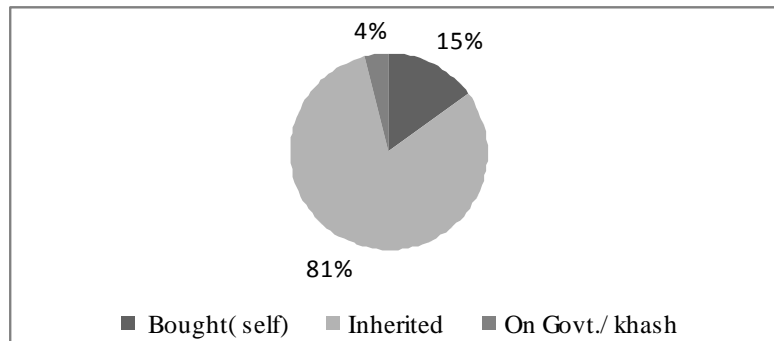


Fig 2: House Ownership Patterns

Magnitude of Damages by Cyclone

The people have affected in different time by cyclone and storm surge. On the basis of respondent's

response, the memorable and mentionable cyclone and storm surge occurred in year 1991, 1996, 1997 and 2010. But the magnitudes of disasters were not same in that time.

Table 4. Damages of Houses in Taka

Year	Damages of Houses (in Taka)										Total Households	Affected	
	0-25000		25001-50000		50001-75000		75001-100000		100000+			Number	Percent (%)
	N	p	N	p	N	p	N	p	N	P			
1991	13	4.49	40	13.84	128	44.29	97	33.56	11	3.80	289	289	100.00
1996	20	6.78	112	37.98	40	13.56	6	2.3	-	-	295	178	60.33
1997	12	4.06	67	22.71	89	30.16	20	6.77	2	0.88	295	190	64.40
2010	7	2.33	47	15.67	25	8.33	-	-	-	-	300	79	26.33

Source: Field Survey, 2010

*N= number *P= percent

Table 4 showed that 44.29% (loss 50001-75000 in taka) houses were damaged by disaster in year 1991 and 37.98% (loss 25001-50000 in taka) were damaged by disaster in year 1996. Almost 100% and 60.33% houses were affected respectively in year 1991 and

1996. In year 2010, 26.33% houses were damaged by disaster in Kutubdia.

Damage of Houses by Structure and Time

According to this study, semi pucca (1.73%), katcha (59.17%) and wicker (39.10%) were affected by

cyclone in year 1991 and in year 1997, 34.23% *katcha* and 30.17% wicker houses were affected by cyclone in the study area. In year 2010, 10.66%

katcha (made up with tin+bamboo and straw+mud) and 15.67% wicker houses were affected by cyclone.(Table 5)

Table 5. Cyclone Affected Houses by Structure and Time

House type	Types of house affected by year							
	1991		1996		1997		2010	
	N	P	N	p	N	p	N	P
Semi-pucca	5	1.73	-	-	-	-	-	-
Katcha(tin+wood)	19	6.57	2	0.69	-	-	-	-
Katcha(tin+bamboo)	20	6.92	10	3.38	7	2.37	5	1.66
Katcha(tin+mud)	25	8.65	15	5.08	17	5.76	-	-
Katcha(straw+mud)	105	37.03	67	22.71	77	26.10	27	9.00
Wicker	113	39.10	87	28.47	89	30.17	47	15.67
Total	289	100.00	178	60.33	190	64.40	79	26.33

Source: Field Survey, 2010

*N= number *P= percent

House Damage by Nature and Year

As a result of cyclone in 1991, the damage of houses was extensive at Kutubdia. About 43,139 houses were damaged, where, 41,120 houses were fully and 2019 houses were partially damaged. Then 9000

families became shelter less. The remaining affected people did not get proper help in housing from any source.

Table 6. House Damaging Pattern by Time

Nature of damages	Surveyed (HH) and time of losing houses							
	1991		1996		1997		2010	
	N	p	N	p	N	P	N	P
Totally washed out	189	65.40	2	0.67	10	3.39	9	3.00
Broken down of houses	90	31.14	45	15.25	97	32.88	-	-
Roof damage	8	2.77	71	24.06	68	23.10	-	-
Partial damage	2	0.69	60	20.33	15	4.48	70	23.33
Total	289	100.00	178	60.33	190	64.41	79	26.33

Source: Field Survey, 2010

*HH – Household Head, *N= number *P= percent

65.40 % houses were washed out totally in 1991 but in 1996, 1997 and 2010 washed out houses were very little. But the houses were broken down for their weak structure in 1996 (15.25%) and in 1997 (32.88%) (Table 6).

by their own cost and 20% took loan from NGOs. Rests of them tried to rebuild their houses by different sources. In post- disaster, 39.67% people repaired by own cost and 40.33% of the local people repaired their houses by NGOs, Govt. and Own cost (Figure 3).

Source of Repairing Cost by Time

People built and repaired their houses by their own cost before disaster and after disaster. They built their houses by own cost, Govt. and NGOs donation. In pre- disaster, 73.33% people renovated their houses

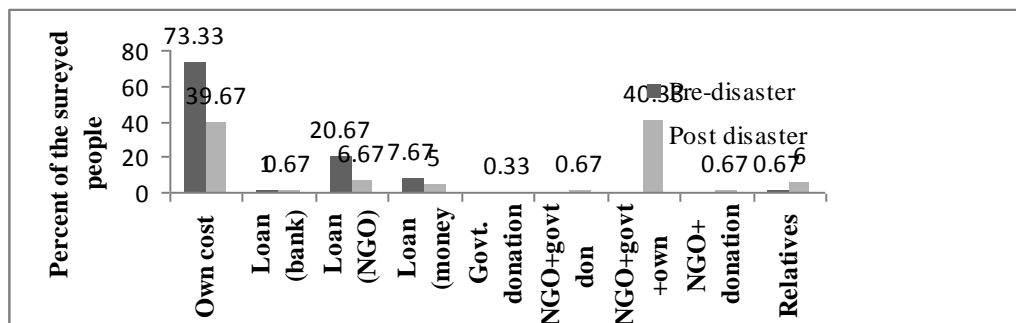


Fig 3: Sources of Repairing Cost of the House by Pre-Disaster and Post Disaster of the Respondent

House Repairing Frequency and Costs

From the Table 7 it can be observed that total 52.67% houses were needed to be repaired in each year. Of these, repairing costs of 13.67% houses, 48.33% houses and 4% houses were respectively the

range from 0-5000, 5001-10000 and 10001-15000 in study area. 10% houses were repaired after 2 years later and repairing costs for those houses was the range from (10001-15000) tk. Total 11.67% houses were repaired after 6 years later.

Table 7. House Repairing Frequency and Costs

Frequency	Repairing cost in taka									
	0-5000		5001-10000		10001-15000		15000+		Total	
	N	p	N	p	N	p	N	P	N	p
Every year	41	13.67	120	48.33	12	4.00	-	-	158	52.67
2 years	-	-	35	11.67	40	10.00	-	-	75	25.00
2-4years	-	-	-	-	13	4.33	-	-	13	4.33
4-6year	-	-	-	-	2	0.67	17	2.31	19	6.33
6+year	-	-	-	-	-	-	35	5.00	35	11.67
Total	41	13.67	155	51.67	67	22.33	52	17.33	300	100.00

Source: Field Survey, 2010

*N= number *P= percent

The Structural Condition of Houses

Based on field survey 2010, a significant number of respondents urged that 56 % houses were vulnerable and 44 % houses were not vulnerable in the study area.

their houses due to facilities (Loan facilities and training program on house building and disaster preparedness) and 2% could not repair their house due to time. (Figure 4)

Causes of Not Repairing Houses

Nevertheless, due to money 88.96 % people could not repair their houses. 7.14% people could not repair

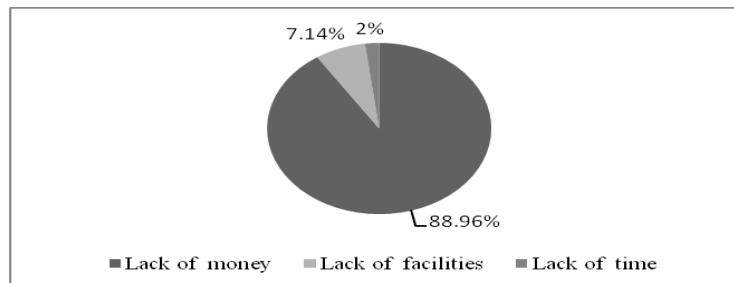


Figure 4: Causes of Not Repairing Houses

Conclusion

On the basis of the above findings it was evident that most of the houses of Kutubdia were *katcha* type (made up with tin+wood, tin+bamboo, tin+mud, straw+mud and jhupri) and vulnerable. *Semi pucca* and *kutch* type houses were damaged partially or totally by cyclone in year 1991, 1996, 1997 and 2010. 88.96% people could not repair their houses where as a small portion of damaged houses were repaired by own cost, loans, NGOs and govt. donations. Based on the study on the housing condition of Kutubdia the following recommendations can be made to improve the condition of houses and disaster resilient housing:

- 1). National housing policy should have included

- 2). Govt. and NGOs should provide (condition free) soft loan to the people of Kutubdia for building disaster resilient housing and for repairing houses to mitigate disaster.
- 3). Govt. should build the multi-storied *pucca* building (community building) that can mitigate the effect of disaster.
- 4). Provides the technical support for disaster resilience housing structure and arrange a program on disaster preparedness and awareness.
- 5). Especially, a specific sector should remain in developing coastal housing structure in every Govt. budget.

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