The Chittagong Univ. J. B. Sci.,Vol. 7(1 &2):35-44, 2012.

FLOOD ADJUSTMENT PROCESS – THE CASE OF CHAR PATHAILKANDI VILLAGE, BANGLADESH

KAZI MD. FAZLUL HAQ[1], KAZI MD. BARKAT ALI[2], SARA TASNEEM[3]
[1] Associate Professor, Department of Geography and Environment, University of Dhaka.
[2]Assistant Professor, Department of Geography and Environmental Studies, University of Chittagong.
[3] Senior Lecturer, Department of Business Administration, Daffodil International University, Dhaka

ABSTRACT

In the course of long habitation in the flood prone area many adjustments to the flood hazard have evolved. In the aftermath of flood the inhabitants of the flood affected area undertook various measures to lessen losses and coping strategies are observed to live with the devastated situation. The study also revealed that due to flood hazard human adjustment takes place in a broad pattern on a wide range of order. Flood hazard has extended its disastrous hand to all aspects of human life. Mainly five kinds of tangential adjustments are identified. They are wealth, health, shelter, occupation and in movement.

Key Words: Flood, Adjustment process, Char Pathailkandi village.

INTRODUCTION

The adopted measures and coping strategies to flood hazard are defined as adjustment process. Floods are the most universally experienced natural hazard, tend to be larger in spatial impact, and involve greater loss of life than do other hazards (Beyer 1971). Flood hazard is spatially an extensive phenomenon in Bangladesh. Bangladesh forms the largest delta in the world and due to such topographical characteristics she suffers from recurring flood. The nature of economic activities or the habitat of Bangladesh is more or less completely under the grip of this nature's gift - may be good or bad. The agricultural pattern and other economic functions are matching to this and shaped by this natural calamity (Haq and Wodeyar 2000).

The term "adjustments" refers to many courses of action available to the managerfor coping with natural hazards (Slovic *et al*. 1971). While a lot of work is done on flood, little attention has been given to human adjustment, perception, behavior and ecological balance to the natural hazard.

[1] Corresponding author email:kazihaq@yahoo.com

Laying in the intercept of 24° 24′ N latitude and 89° 49′ E longitude, stands on the western bank of the *River Jamuna* the study area has a high degree of flood hazard from river flooding. The nature of flooding is not uniform and varies from season to season. Agriculture is the basic component of the economy of the study village.

MATERIALS AND METHODS

The objective of this study is, thereby, to discern the flood adjustment process in flood prone area and more specifically to know about the seasonality of flood, occupation, mobility and mode of transport and grain preservation adjustment process in flood prone area. The Participatory Rural Appraisal (PRA) method is carried out to know the human adjustment and adaptation in relation to the flood in *Char Pathailkandi* Village, which is located in the severe flood hazard zone of central part of Bangladesh. The authors have given much importance for qualitative approach through empirical base in analysis.

To measure adjustment, the researchers first considered those techniques which have been used in the measurement of attitude. Scales are good techniques for assessing the attitudes and typically are ordinal measures. Adjustment could be measured by the use of a series of questions, with the alternative answers being ranked in ascending or descending order.

Flood Hazard perception

The flood hazard literature demonstrates the primary importance of experience in the development of flood hazard perception in floodplain occupants (Smith and Tobin 1979). In communities with a 'flood culture'- essentially those that experience floods relatively frequently –pre-event adaptations and adequate 'in-event' response can lead to reductions in both tangible and intangible damage. The theoretical range of options available to manage flood hazards is large. It can include structural (dams, reservoirs, relief channels, embankments) and non-structural (land use planning, flood warning systems, evacuation, insurance) options at the individual, institutional and government level. In reality, however, this range is limited by technical, political, economic, social and environmental constraints. It is common for a mix involves options – both structural and non-structural – to be appraised. This involves complex institutional and decision-making frameworks to arrive at the compatiblility of these options.

On an historic continuum, the relationship of humans and nature has been represented by phases such as an early, fearful phase incorporating sacred and

magical elements; a controlling phase incorporating the exercise of power over nature; and a phase of harmony in which human beings adapt to and cope with the environmentation (White 1973) charecterises the same three phases as folk, industrial and post-industrial. The value of multi-dimensional approach to flood hazard management (corresponding to a post-industrial, harmonic phase) has been increasingly recognized as the most appropriate. However, these opportunities can be limited in practice because of a range of institutional / agency constraints.

RESULTS AND DISCUSSION

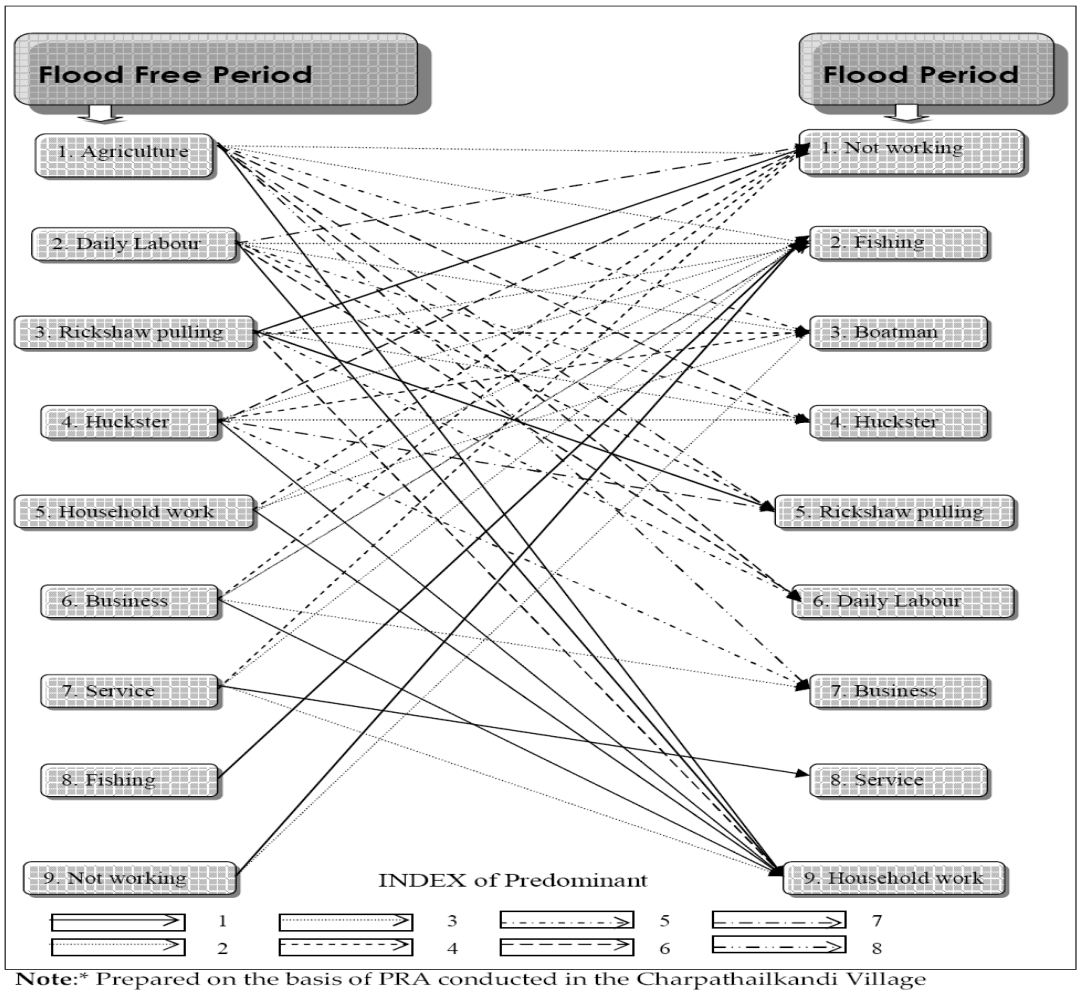
The adjustment and adaptation has been mainly observed in occupation, daily needs, dwelling, grain preservation, medical, mobility and transport.

Occupational Adjustment

During the flood free period, an agriculture, daily labor and rickshaw-pulling are the three most pre-dominant occupation of the study village. At the same time the fisherman and boats men will shift their occupations to other. Likewise, there is a shift of occupation from one to another depending on the variation of natural calamity. Fig.1 highlights about the considerable change in occupation from flood free period to flood period has taken place. Agriculture in flood free period get more predominance over household work, not workers, the fishing, boats man, huckster daily labor, rickshaw pulling, and business - consequently as occupation in flood period. In flood period household work, fishing, boats man, rickshaw pulling, huckster, daily labor and not working consequently get predominance as occupation from daily labor in flood free period. Fishing, boating (transportation) occupation becomes more active during flood period.

Often employment opportunities in the flood free areas become so scarce that the risks of leaving home for good are very high and staying back or returning home to bear the brunt of floods is often a more desirable option than moving elsewhere.

FIGURE 1: ADJUSTMENT OF HUMAN USE SYSTEM TO ENVIRONMENTAL SETTING



Note:* Prepared on the basis of PRA conducted in the Charpathailkandi Village

Adjustment in Daily Needs

The essential features of the natural and human use system can be captured in the water-yield relationship. At the time of flood food crisis grow more and more due to scarcity of fuel and fireplace, the dry foods get more priority. Tube wells sunk under water, so people have to depend on supply water for drinking purpose. Table 1 depicts how people change their food habit. Rice becomes staple food in flood free period followed by chapatti and parched rice. These items need fuel for backing, mills for grinding, and also require time and space to store. During flood free period all these are possible. Hence above

mentioned needs become predominant. Where as dry foods like *Chinra* (a food item prepared by frying wet paddy and then thrashing the grains into flattened size by a husking pedal) gets more predominance followed by parched rice, bread etc. during second phase i.e., flood period. The reasons for this change is mainly people have to give much attention to survival first and the natural calamity doesn't permit to live as in during flood free time. There is compulsion to change in drinking water also i.e., from tube well in flood free time to supplied water during flood period.

TABLE-1: CHANGE IN PREDOMINANCE OF DAILY NEEDS

Daily needs		Flood free period	Flood period
Food	Rice	1	6
	Chapatti	2	5
	Bread	6	3
	Parched rice	3	2
	Chinra	4	1
	Sort of cake	5	7
	Biscuit	7	4
Drinking water	Tube-well water	1	-
	Pond water	2	-
	River water	3	-
	Supply water	-	1
	Flood water	-	2

Note: Figures show the preference at the time of study

Dwelling Adjustment

In addition to crops, the houses They live in are also damaged very substantially. So long as water remains below the floor level, a village hut made of earth and bamboo is likely to withstand the pressure of water. But as the flood water reaches a height above the floor level, the houses become vulnerable. To save life, dwelling adjustment is a must, protects their life and observed in daily needs during flood occurrence. The human adjustment is so strong that, the dwellers do not want to leave their houses easily though there is a pain and risk. Instead of leaving the village, people change the house structure which suits and protect their life and their household property/things to a greater extent. The dwellers of both tin made and bamboo made houses try to adjust to standing water by making platform to preserve grains, sitting place, sleeping place in the flood

period, which is a distinctive characteristic of this village. Straw made house structure dweller takes shelter in institutional centers like - school or give more priority to shift houses on roadside and at highland place.

Even though floods neither occur simultaneously everywhere, nor come up to the same height in every affected region, yet there appears to be a good deal of similarity in the ways people in all these regions try to face flood hazards and overcome the resultant difficulties.

Nowhere do people desert their homes unless they are compelled to do so. If floods force them out of their houses, their first choice is to look for a temporary shelter within the village as close to their home as possible. If that is not possible, perhaps because flood water has entered into every nook and corner of the village or, because they are unable to get to a higher ground on some one else's land, they try to find shelter in some nearby village. It is only when even that option is not available that people brave the uncertainties of the outside world in search of food and shelter for the time being. As floods are a temporary phenomenon most of the people who leave their homes wait for the flood water to recede and then return to their houses to begin a new their economic activities. Only the very few who do not own any land or working capital at all and are faced with the grim prospect of unemployment and starvation in their usual pace of residence actually desert their homes or villages in order to try their luck elsewhere generally leaving for the urban areas.

Adjustment in Health Facilities

As flood proceeds, getting medical facilities become difficult to the people. During flood free period local medical shops serve the common treatment for the people but in flood period people have to go to local *Kabirajs* (the local word used to medical practitioner who follows an unani system /ayurvedic treatment) because of their accessibility to all easily. To get better medical facilities people go to *sadar* hospital (government) during flood free period but in flood period people also accept to get such facilities from relief centers (Table 2) as these arrangements made by the government. Yet most of the people depend on the *Kabirajs*. The reason is these *Kabirajs* have become the commonness and people have a feeling that they are also members of their families.

TABLE-2: HEALTH FACILITIES AND PREDOMINANCE

Health Facilities	Predominance	
	Flood free period	Flood period
Local medical shop	1	-
Sadar hospital (govt.)	2	4
Kabiraj*	3	1
Red crescent (Red cross)	4	3
Relief centre	-	2

Adjustment in Mobility and Mode of Transport

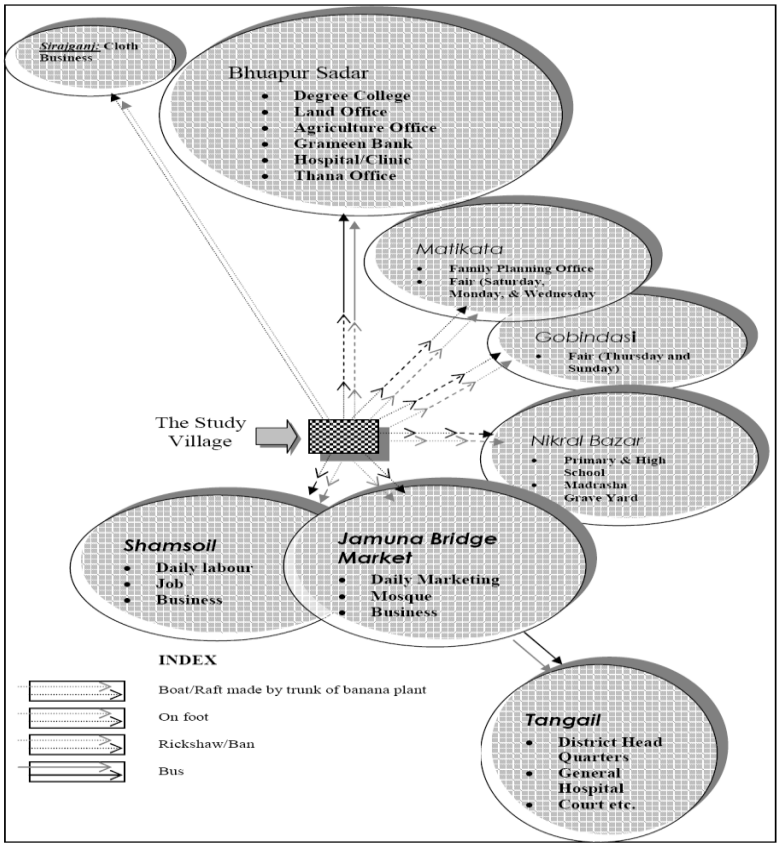
The mobility and mode of transport of the people varies from flood to non-flood period. The village and its surrounding area inundated by flood that is why to go any where out of the village, people have to cross inundated area by some means of boat or raff made by trunk of banana plant. The functional linkages between study area are observed with *Bhuapur thana* (*thana* is a local government unit treated as the basic unit of local level planning in Bangladesh), where administrative, educational institution, medical facilities/Banks are located along with or surrounded by the market areas like *Nikrail Bazar*, *Shamsoil, Sirajganj*. Movement of the village people to these places are determined by different transport means depending on inundation of floods, highlands and risks. Hence the means range from on foot, boat, ferry, bicycles, rickshaws, auto-rickshaws and by bus. The mobility / functional linkages of people are more with *Bhuapur*. The mode of transport from study village to the *Bhuapur* and within village is carried out by boat / raft, on foot and by bus consequently depending on the intensity of flood.

Nikrail Bazar is located in Nikrail union where fair takes place twice in a week. i.e. on Tuesday and Friday. The educational institutions like primary high school and Madrasha (religious education centre for the Muslim) and even the graveyard are located in and around this place. People's mobility to these locations from study village also high and mode of transport are by means of boat or raft, on foot, and also by Rickshaw/Rickshaw van.

Shamsoil, and Jamuna bridge market is comparatively nearer to the village. So, after crossing the inundated area by aquatic means of transport, people reach those places on foot / by bicycle.

Sirajgnj is the only place where the village people can move directly by boat for business purpose. The size of boats will vary from one feet width to several feet. The boats will be running for hiring or own. The changing pattern of mobility is expressed in the Fig. 2.

FIGURE 2: INTERACTION – THE PURPOSE OF MOBILITY AND MODE OF TRANSPORT AROUND THE STUDY AREA DURING FLOOD PERIOD (SCHEMATIC)



Note : Sketch not according to scale

Matrix Ranking for Grain Preservation

The following matrix ranking for grain preservation shows that there are considerable changes in preference among methods and the peculiar characteristics for grain preservation in flood free period and flood period (Table 3).

TABLE –3: GRAIN PRESERVATION METHODS IN DIFFERENT PERIODS

Methods Characteristics	Tin drum		Jute sack		Dall*		Cola**		Motka***		Earthen Pot	
	FFP	FP	FFP	FP	FFP	FP	FFP	FP	FFP	FP	FFP	FP
Expensive	1	1	5	5	2	2	3	3	4	4	6	6
Secure	1	1	6	6	5	4	3	3	2	2	4	5
Worm attack more	6	6	1	2	2	1	5	5	4	4	3	3
Rat attack more	6	6	1	1	2	2	3	3	4	4	5	5
More durable	1	1	6	6	4	4	2	2	3	3	5	5
Not available	6	1	5	-	3	-	2	-	1	2	4	3
Less preserving capacity	5	5	3	3	6	6	4	4	2	2	1	1
Grain quality becomes down	6	6	2	2	3	3	5	5	4	4	1	1

Note: Figures are referring ranking number (matrix ranking).
FFP = Flood Free Period and FP = Flood period.

* Large hollow basket made of bamboo slips, etc. used for keeping grain etc.

** A large barrel or cask bulging in the middle

*** Large earthen cask or barrel

Though the cost of Tin drum is little higher because of better security and durability it gets more priority for grain preservation in both periods. *Dall* is a most common method to keep grain in the village but during flood period it becomes most un-safe. *Motka* and *Cola* earthen pots are other traditional methods to preserve grains, which also differs in predominance according to their characteristics.

The above discussion led the authors to derive the nature of flood and human adjustment to this natural hazard at all levels on a broader sense of perception i.e. in spite of all the modern means, yet adjustment to environmental setting is only alternative.

CONCLUSION

Since food crisis grows more in flood period, top priority will be given to preserve the food grains. Fuel like jute stick, straw, dry cow dung all should be kept at higher place or hanged under the roof of the house. Boat or Raft made by trunk of banana plant should be kept ready to have safe from the risk of this natural hazard for transport even for daily activities. Crash plan must be taken at least at the micro levels initially by the concerned authorities to protect and correct the nature's risk to the inhabitants living in the flood prone area.

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Manuscript received on 09.01.2012; Accepted on 24.11.2012
The Chittagong University Journal of Biological Sciences, Vol. 7 (1 & 2). Page No.