

A Qualitative Assessment On The Livelihood Pattern, Challenges And Adaptation Strategies Of A Small Group Of Char Dwellers: Case Study Of A Small Riverine Char On River Hooghly Near Bansberia, West Bengal

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Abstract: A riverine char is an integral part of the riverine dynamics. Due to complex activities of rivers many small and big riverine chars has been formed in different parts of the world. Many of these chars are sparsely inhabited. The study incorporates one of these types of small chars, inhabited by small number of people which is situated on River Hooghly near Bansberia, West Bengal. The study which is based on mainly qualitative analysis focuses on their style of living, physical, socio-economic challenges and adaptation strategies to cope with these challenges. Some suggestive measures also has been discussed which can help them to improve their quality of living and to live their life in a better and sustainable way.

Keywords: Riverine char, Livelihood pattern, Adaptation

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I. INTRODUCTION

A Riverine Char is a tract of land which is surrounded mostly by river water. These riverine chars are the result of depositional activities of a river. There are some riverine chars in the River Hooghly which are inhabited by some people, who are dependent on this land for their basic needs like food and shelter. Our study area is one of those places. The lifestyle of the people of this area is entirely connected with nature. They utilise natural resources which are available for them in various ways. The char dwellers of this area adjusted their way of living with the physical and socio-economic challenges. Our study tries to analyse these conditions and tries to suggest some measures which can be applied for the improvement of the conditions of the char dwellers.

LOCATION OF THE STUDY AREA

The study area (22° 56' 14" N to 22° 56' 50" N and 88°24'28" E to 88°24'32" E) is located in between the District of North 24 Parganas & Hooghly, West Bengal (Fig:1). This is a mid-channel longitudinal bar or a riverine char, situated on the River Hooghly. Nearby important cities are Bansberia (located on the right bank of the river) and Kanchrapara, Halisahar (located on the left bank of the river).

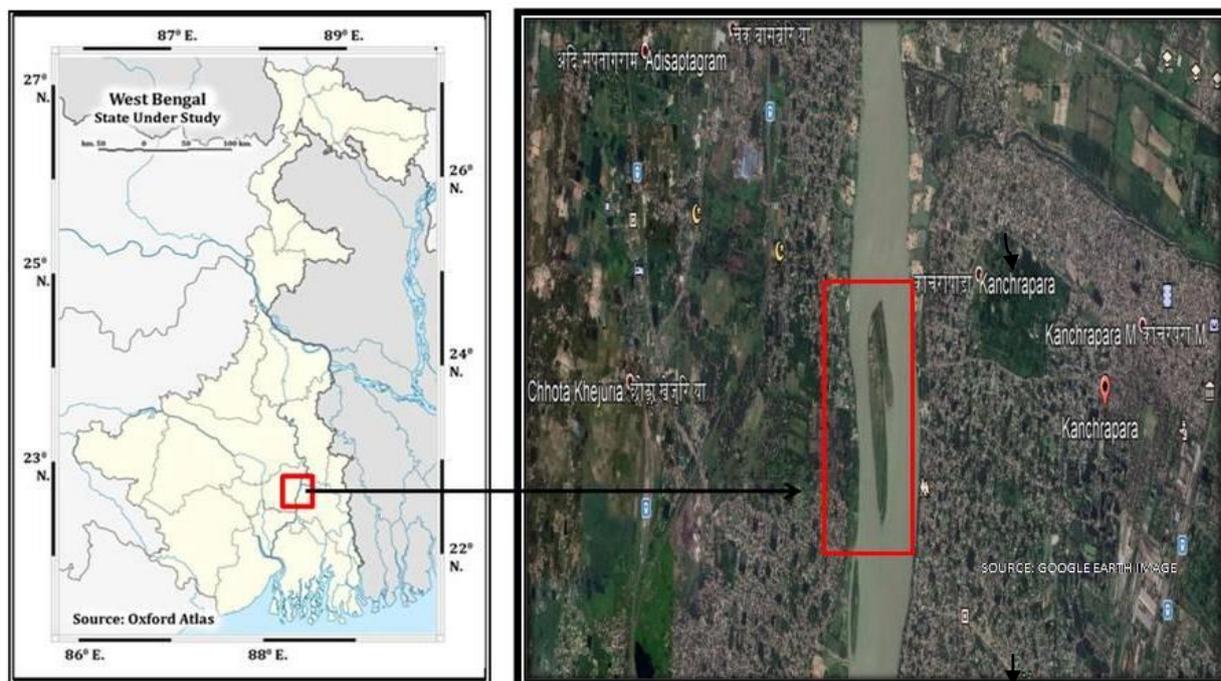


Figure-1: Location of the study area

OBJECTIVES OF THE STUDY

- To study the changing physiographic condition of the riverine char and its impact on the char dwellers
- To analyse the livelihood pattern of the char dwellers
- To study the physical and socio-economic vulnerability of the people living in the area
- To highlight the adaptation strategies to cope with these challenges

II. METHODOLOGY

Both quantitative and qualitative data were collected through a primary survey which was conducted in the month of February in 2021. Data were collected through observation methods and questionnaire surveys from the respective households. Apart from the structured questions of the questionnaire, the dwellers shared their views with the researchers which help to analyse their situations. Ground verification of the satellite images were done through observation methods. Secondary data were collected from some published and unpublished sources. Some maps were created through GIS software to analyse the spatio-temporal changes of the riverine char. All the quantitative data were processed and analysed through MS-Excel and these data are presented in tabular as well as graphical form.

III. RESULT AND DISCUSSION

Physiographic Condition of the Char

Average elevation of the char land from the mean river water level is about 5m. Elevation of the char is greater in the central and eastern section, which is the older part of the char. Elevation decreases towards the western section (Fig: 3). Western section of the char has been formed recently. The central part of the char is stable in condition, but eastern part is subjected to erosion and western part is subjected to accretion. A map has been created (Fig: 4) to show the spatio-temporal variation of the riverine char which affects the livelihood pattern of the char dwellers. Accretion and erosion rate were computed with a 4 year time interval, starting from the year 2003. From 2003 to 2015, the rate of accretion was slightly higher than rate of erosion, but during the time span of 2015 to 2019, rate of accretion is much higher than rate of erosion (Fig: 2). It can be observed from the maps that the right bank of the char is prone to erosion and the left bank is dominated by accretion process.

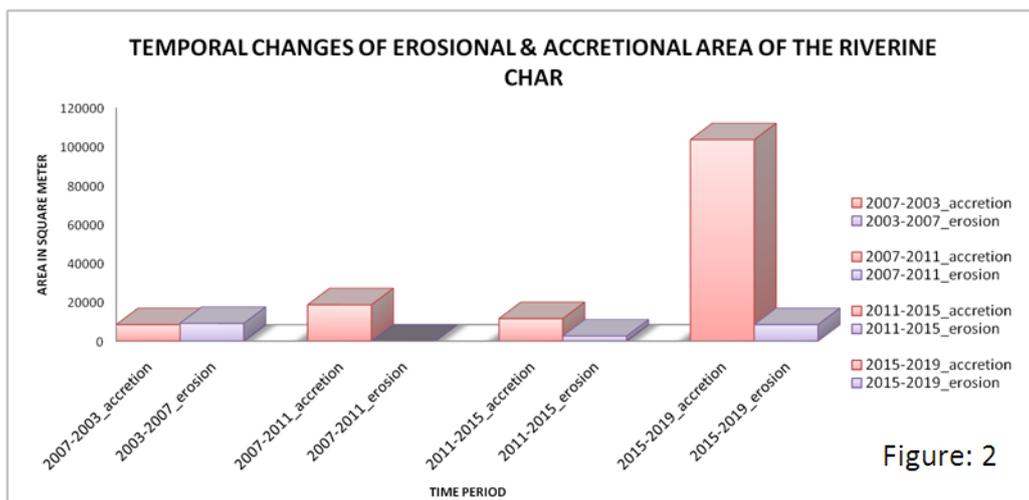


Figure: 2

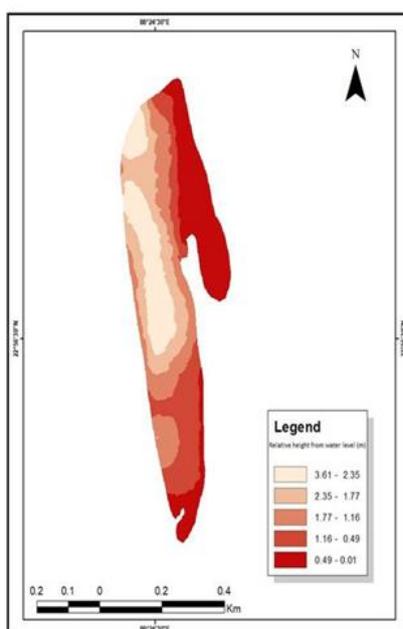


Fig-3: Relative elevation zones of the char from the mean water level



Fig-4: Spatio-Temporal change of the Char area by erosion and accretion

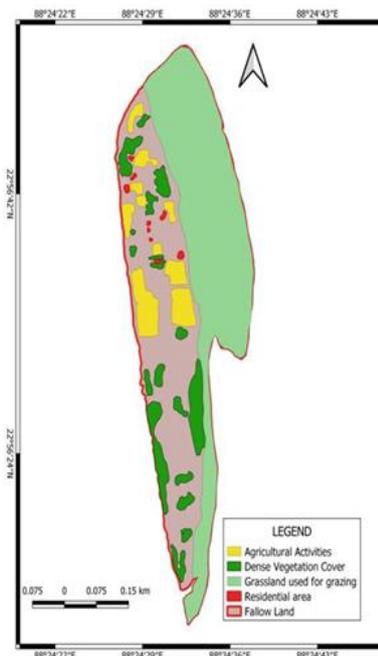


Fig-5: Land use and land cover of the char area

Utilization of the Land and Its Relation to the Elevation

Relief Characteristics	Characteristics	Utilization Of Land
Higher Elevation	Older portion of the char, Some portions are prone to erosion, protected from seasonal increase of water level, inundated during big floods	Mostly use for agricultural activities, residential purposes,
Moderate Elevation	Inundated during moderate size floods and seasonal increase of water level	Seasonal agricultural activities, fallow land
Lower Elevation	Most of the area accreted recently and affected by daily tidal inundation	Mostly covered by long and short grass which is used for grazing purposes; long grasses are used as a building material

Demographic Condition of the Study Area

Out of the total population of char area, 46% is male population and 54 % female population. Educational status of the char dwellers is very low. Most of the working population in the area is not much educated which also makes them vulnerable in terms of finding any job outside. The Younger generation has the

potential of being educated because every child in this area goes to school, but the poor economic condition forces them to leave school after 5 or 6 class to support their family (Table: 1).

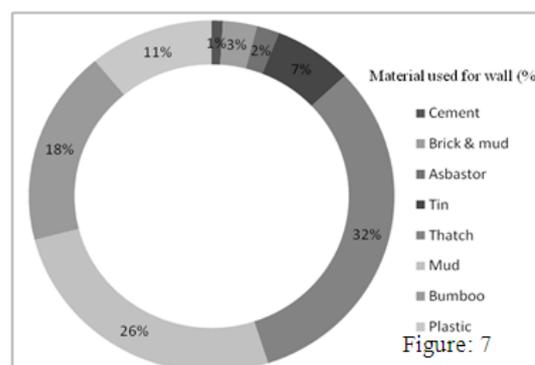
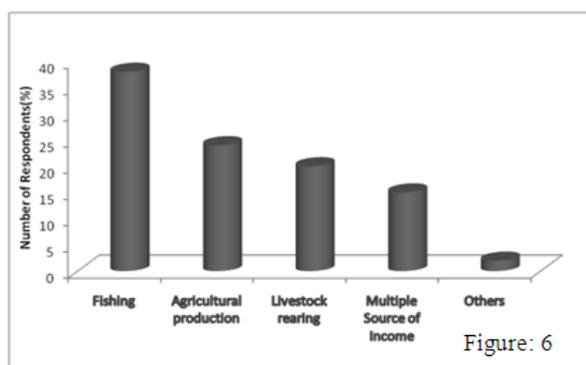
**Table-1:
Demographic Characteristics**

Family member		Percentage (%)	Gender		Percentage (%)
Less than 4		56	Male		46
More than 4		44	Female		54

Educational Level (%)						
Illiterate	upto class IV	Upto class VIII	Upto class X	Upto class XII	Above class XII	
36	28	17	10	5	4	

Livelihood Pattern of the Char Dwellers

Char dwellers are involved in different activities from which they earn and get food. Main occupations of the char dwellers are fishing, agricultural production, livestock rearing etc (Fig-6). Because of the location maximum people are involved in fishing, many people also involved in agricultural production. They utilise the land for some agricultural production like mustard, poppy seeds, water melon, Banana, some vegetables. Every family member whether they are aged population, woman or children is somehow directly or indirectly helping their families in activities for earning or gathering food. Very few people are involved in other activities and tend to go to the other side of the river for earning.



Food is an utmost important need for all people to sustain their daily life. The people of this study area mainly use those fuels which are available near them like wood, dry leaves etc. They also use cow dung as important fuel, but very few of them use gas or kerosene for cooking as these are very expensive for them. They normally cook outside their room in the open space and kitchens are made of mud and thatch (Plate-2). Everyday consumption pattern of food by the char dwellers shows that their food pattern depends on their daily collection of food and earning. When they catch fish they consume it and if they catch more fish then they try to sell it in the nearby market. They get their drinking water from tube well.



Plate-1: Agricultural land in the riverine char area



Plate-2: One of the inhabitant's kitchen areas

Shelter is another important need for human beings for sustenance. Here in the study area housing structure and materials used in houses are very relatable to nature. They normally use those materials which are available near them for construction of houses. Materials which they use mostly for constructing their houses are mud, thatch, plastic, bamboo, tin, asbestos etc.(Plate: 3 & 4) Some of the houses are made at a higher surface to protect it from the partial inundation.

Sanitation facilities are a very important part of society and it reflects the socio-health condition of the area. The sanitation facilities in the study area shows that many people of the area use kachha toilets, even some people use open places, but very few people have pucca toilets. Due to this kind of unhygienic sanitation they face different diseases especially in the rainy season.



Plate- 3 & 4: Houses of the char Inhabitants

Emerging Issues and Vulnerability of the Char Dwellers

Vulnerability is a measure of the extent to which a community, structure, service or geographical area is likely to be damaged or disrupted, on account of its nature or location, by the impact of a particular disaster hazard (Glossary of Environment Statistics, Studies in Methods, Series F, No. 67, United Nations, New York, 1997.)

The Riverine char is detached from the mainland due to its position; physically they are very much prone to some hazards like river bank erosion, flood, cyclone etc. Normally char dwellers have to rely on natural resources available near them in their physical entity for sustenance in daily life. The whole char has experienced severe flooding many times. During those severe floods char dwellers had to migrate to the other side of the char leaving their assets. According to some of the respondents, they have visited inundated char during floods just to collect their stuff.



Plate-5: Fluvial erosion of the char bank

As Riverine Island is an integral part of hydraulic dynamics of the river so river bank erosion is quite common and it increases the vulnerability of char dwellers. The char area is prone to river bank erosion, especially in the high elevation area, which they have used for agricultural and residential purposes.

The entire area and the livelihood of the dwellers are very much vulnerable from different aspects (Table- 2). As a part of the riverine system in every monsoon season this area gets inundated completely or partially. According to the respondents, in last 20 years (2000-2020) they have experienced nearly 4-5 major floods and many minor floods with partial inundation. During those floods they migrated to the nearby primary school on the other side of the river and had to stay there for months. Riverbank erosion is another part of their vulnerability which has taken much usable land from them in the past. If we look at their socio-economic condition then it is clearly visible that they lack access to proper food, shelter, drinking water, proper sanitation, health care, education facilities, proper job opportunities etc. To get these facilities they have to go far away from their habitat, so due to inaccessibility of these basic amenities they become more vulnerable in any Hazards or disasters. As their daily income is very low so their expenditure on food, shelter, education is much less and ultimately they are getting trapped into the vicious cycle of poverty.

Table-2: Dimensions of vulnerability of char dwellers

Environmental	Social	Economic
<p>Hazard proneness-Increasing frequency of environmental hazards like flood, riverbank erosion, cyclones etc.</p> <p>Land degradation-Fear of land degradation or disappearance of land due to any natural disaster.</p> <p>Nature dependency-Higher dependency on agriculture and fishing for occupation.</p>	<p>Social exclusion-Isolation from the mainland or different other areas.</p> <p>Deficiency in facilities-Lack basic amenities like health, education, electricity, transport etc. Marital problem for girls (due to their physical condition)</p> <p>Lack Of Safety And Security Char dwellers especially the Women don't feel safe to the people who came from outside and spent time there to consume alcohol.</p>	<p>loss of economic activities loss of infrastructure</p>

The char dwellers have adapted themselves in different physical and socio-economic conditions throughout many years now. But still due to different conditions like climate change which negatively affect their fish production and agricultural production. On the other side, jobs are lacking for them in this area so in recent days they are migrating to different areas in search of better conditions of life.

Adaptation Strategies of Char Dwellers

Char dwellers normally live in very harsh environmental conditions where vulnerability level is very high based on any natural hazards. Here in the study area people of the char have adapted different strategies to cope up with the scarcity of the resources and sustain in their life.

As the study area is isolated from the mainland there is no connectivity by road so people have to ride a little boat (locally known as “nouka”) to reach the main city near them for different needs. Here an interesting observation has been made that every family member whether male, female or children can ride a boat. Women normally reach the market for selling extra fish by boat and children’s go to school by riding boats on their own.



Plate-6: Houses built on elevated surface to protect it from water inundation

For construction of their own houses or houses for cows, goats they always use those materials which are readily available near them in the char. Their physical position and their socio-economic condition have forced them to adapt to this environment in such a way that they now have understood the value of each and every resource available in that area.

Their occupational status also shows how attached they are with their environment as maximum of them are involved in fishing, agriculture and livestock rearing. Very few of them go to the nearby town searching for a job. Their occupational activity and processes show how the environment can be used in a sustainable way.

The whole livelihood pattern of these char dwellers reflects the proper man-environment relation which helps to understand the idea of sustainability in a vulnerable environment.



Plate- 7, 8 & 9: Char inhabitants engaged in their daily works

Possible Scope of Future Development and Sustenance of Char Dwellers

In recent times, Due to the vulnerability of the natural hazards, fewer opportunities for gathering food, restrictions in occupation forcing the char dwellers to migrate elsewhere. Based on the observation it can be said that the study area has many potential for development in sustainable way which can help them to restore their habitat socio-economically and environmentally.

In recent times it has been observed that this char has become a major attraction for local tourists. Especially In winter many people come with friends and family to enjoy their leisure time in this area. But these tourists are making the environment polluted by throwing stuffs like plastic, thermocol plates, other garbage etc. after use. Sometimes women of the area also feel unsafe for the unorganized way of enjoyment by these tourists.



With this existing scenario, this area can be developed as a local tourist spot in an organized way for future development. Char dwellers also agreed that organized tourism can help their sustenance there and also it will be impactful for the local economy in different ways.

Apart from this, char area also can be available for educational tours especially for the students of Geography, Zoology, and Botany and Environmental science. The environment can be helpful for students to learn new things about different natural laws and also to research and reinvent the potential usability of this type of area in future. It will ultimately help to grow this area as an educational tourist spot also.

IV. CONCLUSION

Being Part of a char livelihood is always tough to survive. Here from this study it can be understood that the level of vulnerability based on floods, river bank erosion was quite high. People of the char managed to survive with their own traditional wisdom and techniques. In recent times they are facing different problems due to their lack of opportunities, lack of access to basic amenities so to solve their problem different strategies can be taken by giving them some options to earn. As mentioned above the potentiality of the area for local tourism can be considered which will automatically help the char dwellers to survive in future.

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