

Bank Erosion impact on fishing activities: A case study of Ghurahola village in Majuli District

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Abstract: This study analyzes the impact of bank erosion on fishermen livelihood development. Bank erosion is defined a change in the statistical properties of the landscape in particular region when considered over long periods of time, regardless of cause. However it is classified into two categories namely predictable and unpredictable climate change based on the discussion with village dwellers. In this paper, those bank erosion or degradation of land condition that may occur in coming times could be predicated in advance is defined as predictable climate changes for example precipitation and those climate change or weather condition could not be predictable in advance is defined as unpredictable climate changes for example changing water current. This study focuses on the impact of unpredictable land erosion on the fishermen livelihood development. It has gained a few attentions from the social science researches. The data for this study were collected through informant case studies from fishing village of Ghurahola village located in Majuli District, the largest river island of Assam, India during the intensive fieldwork period of doctoral research, and the qualitative approaches are used for analyzing the data. The finding of this study explores the correlation between the unpredictable landscape change and multi-dimensional paradigm of poverty of the proposed study village as follows: (1) the landscape change of the village from the last two years, (2) the impact of unpredictable changes on fishermen livelihood development activities: occupation uncertainty, income disorganization, damages, loses of fishing equipments and psycho-social problems, and (3) the suggestions and recommendations from this issue. This study analyzed their social problem especially multi-dimensional poverty with the concept of vicious circle which is a key factor for their prolonged poverty and psycho-social problem which is a barrier for livelihood development activities uplifting of this village and suggests that the measures to be taken to reduce the present scenario of the people.

Keywords: Livelihood development, unpredictable landscape change, Poverty, Natural disaster, largest river island.

I. Background and Objectives Of This Study

The geographical location of the India has made the people very much depended on the environment and vulnerable to natural disasters. When the climate change aggravates, those who are living in rural areas, get affected seriously. Rural livelihood of India is highly dependent on the natural resources which are dependent on the nature and climatic conditions. The life of human including other animals is influenced by their surrounding biotic and abiotic environment called socio-cultural environment. Many anthropologists view that human culture which means „ways of life“ is usually the consequence of the interaction between man and nature. That is to say that way of food productions, habits, dressing patterns, religious beliefs and rituals are moulded by their surroundings environmental features. In livelihood activities, the physical environments like lands shape, water resources are considered as major determining factors in general and climate

condition is a prominent in particular. India is essentially “a nation of villages” and nearly 70 per cent of total population of India living in villages [1]. The Indian economy is built upon the village economical sectors. It should be mentioned that Mahatma Gandhi also revealed this kind of thoughts. At the same time, the economic activity of village dwellers of India is related to its environment. And also Indian annual major budget income depends on these villages economic activities. In this situation, climate change is a major challenge of village’s livelihood activities in India and is viewed the causes for the many social problems particularly multi-dimensional poverty. Fishing has been the oldest and most important livelihood option for the inhabitants of North-East India, since times immemorial. Besides the riverine environment, it has considerably contributed to the livelihood security of the valley populace. The life of the North east community centered around the river valley zone. Through a festival, marriage functions or even death, the community is closely related to the natural riverine resource. About 1 per cent of Indian’s Population depends upon the fishery sector as a primary source of livelihood which provides direct employment to about 6 million fisher men and women and to another 6 million people who are employed in fishery related activities. The contribution of the fisheries to Gross Domestic Product (GDP) is about 1.3 percent [2]. Fishing is an important economical sector in the South Asian region along with agriculture practice. Both sectors are being mostly undergone into the vulnerability due to climate change. The consequences of climate change is directly or indirectly affecting people who are solely dependent on the livelihood occupation “fishing” is facing lot of multi-dimensional and socio-economic problems. Under this climate changing scenario, objective of this study will be discussed the problems faced by fishing community for their livelihood development regarding the climate change. In this context, a survey has been conducted to assess the relationship between the impact of unpredictable bank erosion and multi-dimensional poverty in a riverine island Majuli fishing village namely Ghurahola of Majuli, India. It should be noteworthy that fishing is one of the most vulnerable sectors to be affected by the unpredictable bank erosion. Despite the technological advance in the 20th century, weather and climate are still key factors in determining fishing production in the most areas of North East India. Changing patterns of warming, high rain fall and siltation are major variables to determine the productivity of fish and their relationship are not simply linear. The 880-odd kilometers of riverine island that make up Majuli Island are surf-beaten and dotted with a string of approximately 400 fishing hamlets. These fishers rely on adjacent fish resources that are made up of many species [3]. These village dwellers are frequently affected by unpredictable bank erosion along with predicable landscape change. In this background if this problem is not addressed adequately, it could seriously hinder sustainable livelihood development and poverty eradication efforts in this region.

II. Study Area

The study area Ghurahola village, Kamalabari panchayat being one of the fishing villages around 4 km shoreline is situated on the southern side of Majuli district. Even though there are indeed three major caste groups Brahmin, Ahom and kaibartta are living in Ghuraholla village council where the kaibartta fishermen community functions as a separate unit by organizing village Ghurahola which literary means a traditional community area. The total families of this village lived in Brahmaputra bank-shore before the land erosion had attacked during 2004-06. At present, many village dwellers have resettled in nearest place that is long far 1.5 km from the old village allotted by the Government of Assam. However, a number of families are desirous to live at bankshores because of two reasons. One is people who are living in kamalabari ghat bankshore felt that the distinction of new village to bankshore is not free from bank erosion and second is the house to be built by villagers requires lots of hardship as the land area is deeper one. If they move to new house they should spend a lot of money, nearly 2 lakhs in Indian rupees. It should be noted that this village is one of the erosive villages in the Kamalabari ghat river bank. Extensive fieldwork teaches the nature of erosion in this village. It is also seemed as one of the major challenges for their fishing activities.

III. Methodology

Both environmental anthropology and environmental sociology have emerged as subfields within their respective disciplines to address the role of environment from both social and cultural aspects. There are a number of methods associated with qualitative and quantitative in these fields to analyze the relationship between the social problems and bank erosion landscape change. However, the present study is only based on 'case study' that is one of the techniques in the qualitative approaches. Indeed, a case study is an intensive approach. A researcher focuses on only one specific instance of the phenomenon to be studied through this approach [4]. In this follows, the study concentrates the one of the social problems which is as a consequence of the unpredictable landscape change on the village dwellers livelihood development namely poverty. The data for this study were collected through informant case study during the period of fieldwork for the doctoral program. After frequent visits of the village, the researcher made discussion with the village dwellers, which could able record some social issues, particularly the consequence of unpredictable bank erosion that related to poverty. It should be noted here that 40 informants were selected as purposive sample population and inquired for this study. Out of 40 informants, 70 per cent was fishing labourers, another 20 per cent was small boat owners who used traditional equipments for fishing, only 5 per cent of informants were selected from the engine boat owners and rest 5 percent were engaged in secondary activities. Apart from this, the researcher also behaves as a participant observer in this field. It helped to realize the contemporary problems faced by fishermen due to this unpredictable landscape change. During the daily visit to the field area for data collection in the early morning, the feelings of the fishermen who come back from the river and allied area could be realized. Some time they talked very happily and the other time they expressed their sadness. It depends on the scale of fish netted by them. There are some questions arisen through the conversation with fisher-folk what are the factors behind this imbalance in the fishing activities? That is, how they can catch lot of fishes on some time and why they are returning with empty lesser quantity the other time..! In such way they shared lot of information which is mostly related to the unpredictable landscape change, that helped to analyze their multi-dimensional poverty.

IV. Result and Discussion

Impact of landscape change on the human life has been continuing since the origin of the human beings in the world. However the dimension of the bank erosion on the human life varies from time to time. At present it is one of the most significant challenges to global economic development as well as village dwellers livelihood development. During the last fifty years, many countries have felt its effects in all sectors. There are many studies to estimate the effects if landscape change on the village life forwarded by many researches. Hence, most of them brought out the impact of predictable bank erosion of river on the human life and its related problems for example soil, water, farming, human health. This study explores the impact of unpredictable bank erosion in the livelihood developmental activities. Especially, it focuses artisanal fishing community. Fishing is a human activity and work as an interface between human society and river. Climate change has a multi-dimensional effect on human activities. Of these, fishing is prone to be the most affected because the important determining variables, that temperature and precipitation are mainly climate related. When it suddenly undergoes into radical change, the productivity of fish is also affected. In this following, the impact of unpredictable changes has emerged as an important phenomenon in the human livelihood development researches.

4.1 Nature of Climate change The largest riverine island Majuli, Assam, India has been faced episode of tragedy experiences in relation with environmental disasters such as massive Brahmaputra river bank erosion , frequent changes of monsoonal pattern of rainfall which are the results of landscape change. In particular, fishing communities of this region are being mostly affected by this disasters leads to shifting of human habitation, siltation of household fishery, profit lose, equipment damages as well as heavy impact on the day to day

life of human beings. Bank erosion is defined a change in the statistical properties of the landscape system in particular region when considered over long periods of time, regardless of cause. Beside according to the Intergovernmental Panel on Climate Change (IPCC), climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity [5]. However, according to the survey from the study area, this study classified changes into two sub-categories: predictable landscape change such as siltation, shifting of river course, heavy rain and unpredictable change such as nature of arable land degraded, river bed upliftment ,and water current. In this paper, the researcher defined that those bank erosion and landscape conditions that may occur in coming future times could be predicated in advance as predictable environmental change for example heavy precipitation and those climate changes or weather condition could not predict in advance as unpredictable climate change for example changing water current. However, the impact of unpredictable climate changes is only considered for the study. The unpredictable climate change is further divided into two sub types by the village dwellers. One is heavy rainfall during the month of June-July and river bed siltation. However, key informant Nitul Hazarika of 41 years old explained about the nature of river course changes during the past decades. For better fishing the bank should be seems with the low deepness of river. Second sub type of unpredictable climate change is river water currents. It may change suddenly changes its course and changes the track of the river to other side during the monsoon period and which impacts on fishing activities. In general, artisanal fishermen have known and judged based on their traditional knowledge, which month is suitable for fishing and which is not good. Further, they have also known which kind of nets can be used in the particular month. Of the following information such as folk song, proverb and other village dialogue also revealed through their narratives. But they could not predict the nature of river in a particular month based on their traditional knowledge system after the recently occurred bank erosion. The informant told 'we awake up for fishing in the dawn time that differs person to person from 2 am to 5 am and come to bankshore. But some time we could not lounge our boat into the river due to the rough current. In some other time, the owner of engine boat could engage in fishing. The small scale fishermen may join with them. That also depends on the number of person and the relationship between them. If their nets are damaged by getting stuck with deep wooden lough or lost with the water current, fish may not be caught on that day. In this juncture, the following discussions have been analysed to elucidate the problems faced by the fishing community due to the unpredictable environment change based on empirical data.

4.2 Consequences of environment changes on the fishermen livelihood: The earlier discussion on the unpredictable environment change has paved the way to analyze the major socio-economic problems faced by the fishing community in ghurahola villages, kamalabari due to the impact of unpredictable environment change.

That is as follows:

- 4.2.1. Occupational uncertainty
- 4.2.2. Income disorganization
- 4.2.3. Equipments Damages and lost
- 4.2.4. Psycho-social problems

4.2.1. Occupational Uncertainty Fishing is looked upon by the anthropologists as a kind of hunting activity because the fishermen could not determined their harvesting and many fishermen believes that fishing is a fortune. In this regards, their occupation is also considered as an uncertainty. People who are engaging for fishing that is only meant 'peasant fishermen' in this study can involve fishing activity in whole year than agricultural famers. Hence, they could not properly engage due to the unpredictable environment change. It is noted that the Government of Assam banded 45 days for fishing activities in the river, beels etc. During last January - February 2013, most of the fisher folk did not go to the fishing for many days due to the un-season. In this situation, the heads of many households are being without any earning. It is difficult to manage the bread for their daily life. Uncertainty of fishing affects on the life of family dependents. Particularly those who are the day to day labourers in fishing and who are going to work with other boat members easily trapped into multi-dimensional poverty. According sample data, 25 per cent of fishing labourers are living under the poverty line. Because, their income depends of the catching

fishing that is to say, first the total income is divided into two shares, one share would be allocated for the net and boat that is for the owner, and second part of share is further divided to all members who engage in fishing by this boat. The amount of sharing income depends on the how many laborers engaged in a particular boat. In this situation the fishermen labour's could not manage their family during this off season even the Government has given free ration rice. Some people try to change their work into non fishing activities and some other people try to bring up their adult male children through the college education for the purpose of ensuring their work condition. People who are working in private sectors or other types of work and parents of the male adult children who are studying in colleges were interviewed to know why do not engage in fishing and what is the reason they expense a lot of money for their male adult children's education? Regarding this question, all expression of the informants are summarized and given follows: the amount of income earning from the sea are reducing in continually after the tsunami and it is not enough to manage the day to day life with increasing coast of living. They have no way to short out this problem because, if they like to earn a manageable income for their standard life, they should invest a lot of money to reorganize their fishing equipments and at the same time government did not also support them to get a loan. So, they have changed their occupational patterns from tradition and they try to change their children's occupational capacity. It should be noted that this kind of opportunity is delimited by their socio-economy background. This discussion also reveals the impact of climate change on the fishermen's livelihood activities.

4.2.2. Income disorganization There is no notion of private property in the river, even during the fishing season those who desire to engage in the fishing activities may involve. However the income pattern varies person to person based on their equipments, co-workers and when some fishermen may catch bulky of fishes, others come back with empty packets. One of the informants, Thanuram Das of 48 years old said that, he went to river with a type of net which can be used for catching fishes on his boat. But, that day the heavy rainfall and water current has changed and the fishes are caught by others. At the same time, he came back with a few fishes that were not enough for his family members. So, fishermen could not predicate their income per day. Because they could not guess sudden change of water current due to the climate change and how much fishes can be catch on a day. Many fishermen usually come to the river bank at the dawn time. But they could not catch fish in the river in order to the increasing river current.. So, that whole day, their occupation is absence and they involve the plying cards and talking with others, repairing their nets damaged by the wooden blog or bamboo parts or some other reasons, because most of the fishermen only know to engage the fishing activities. This also affects on their day to day income patterns. Irregular income is one of the major impacts of environment change and it contributes to the multi-dimensional poverty of the village. That is to say, uncertainty of the income generates the functions of the vicious circle in the fishermen livelihood. For instances, seasonal unemployment created by the climate change leads to the income disorganization. It leads to poverty though for a short term. If this condition continues for long, the affected family is trapped by chronic poverty. It also reflects on the family particularly on children's education, health and hygiene, family psychology, and other family related problems.

4.2.3. Damaged and lost the equipments Damages and loss of fishing equipments is a serious problem made by environment change. Even though, the government has provided a little support to eradicate their problem related to fishing activities after the massive bank erosion, the village dwellers face many challenges regarding the unpredictable landscape change in the whole year. Pranab Das of 35 years old has a boat with only two types of net. One day, he went to sea in his small boat with his friend and threw the net for fishing. After an hour, they hauled that snared net. But they could not haul all parts of nets because the net got stuck on the deep river wooden log. The reason which he told that he put the net considering the direction of water current, but the water current suddenly changed and it drew out net which plunged into the sea. If Pranab wishes to engage in fishing again, he has to buy a new set of net. For this, he should invest nearly 3000 Indian rupees (more or less 50 dollars). It is not immediately possible because, he is a poor village dweller and his wife and two children depend on his earning. His daily income is enough only for a few days. In this

situation how can he spare money for fishing equipments? The government also doesn't properly extend support for this. So, he easily becomes a fishing laborer or borrows from lenders to buy new fishing equipments. According to this case study, the impact of the environment change makes such derogatory consequences on the fishermen livelihood and leads to multi-dimensional poverty.

4.2.4. Psycho-social problems The discussion described above portrays the relationship between the impact of landscape change and better livelihood in the study village. This section elaborates on the psycho-social problems in relation to the impact of climate change. The term psycho-social refers to the psychological and social factors that influence mental health. Social influences such as peer pressure, parental support, cultural and religious background, socioeconomic status, and interpersonal relationships all help to shape personality and influence psychological makeup. Individuals with psychosocial disorders frequently have difficulty functioning in social situations and may have problems effectively communicating with others. In particular stress, depression, anxiety, unnecessary angry and tension are generally correlated with occupational uncertainty, income disorganization and losing their property. Thus, unpredictable environment change contributes to new psycho-social problems among the fishermen community. Especially the person who is affected by the impact of unpredictable climate change is marginalized and could not survive within the same society. In this situation, he may become an alcohol addict or waste time by playing cards. But this kind of case is minimal in the field area. However a person, who lives alone in the river bank-shore area, was enquired about the reason for his life alone. He told that he married and had a son (20 years old) and daughter (18 years old). But, now he has been living alone on the bank-shore site and prepares food himself since two years. His wife and children live at original settlement and they do not talk with him. The reason for his separation could be realized by analyzing his life-history. He is indeed an alcohol addict and there are some family problems in his household because of this. So he left the home and settled on the bank and stall a tea shop. He doesn't do any help to his family. It should be noted here that even though several factors have contributed to his present addiction to alcohol, the occupation uncertainty and its associated facts income instability are also the one of the major factors.

V. Conclusion And Suggestions

In this study, impact of unpredictable environment change has been assessed based on the informant case study and participant observation made in Ghurahola Village under Kamalabari Panchayat in Majuli district traditional fishing village, Assam, during the last six month. Based on the local people's opinion, their sustainable livelihood developmental activities have been affected by this impact of unpredictable bank erosional change. Further, this village also was experienced and degraded by two major floods during the last six year. In this background, this recent study has also revealed the impacts of unpredictable environment change on the fishermen livelihood development under the four major sub issues. The impact of climate change in fishermen livelihood development activities is clearly interpreted by the result of analysis. In this background, considering the social problems portrayed above and the discussion made with selected village key informants and peer groups, the following suggestions are proposed to promote the livelihood development in the fishing village.

1. Conducting awareness programme to redeem them from their poverty these will include encourage them to save at least a minimum amount from their earnings. Encourage them to live a contended life with what they have.

2. In order to spend the time fruitfully they should be encouraged to occupy themselves with some form of self employment particularly off season in fishing.

3. The government should pay their attention to recover socio economic condition of families affected by the unpredictable bank erosional change. Particularly, the government should provide necessary support to fishing labourer's families. Because, they are suffering to manage their day to day life for the reason of impact of unpredictable environment change.

4. The government should provide the compensation to person who lost their fishing equipments due to the unpredictable climate change.
5. The village dweller told that, the government doesn't provide the loan for upgrading their work condition. So the government should even arrange or provide a loan for the labourer fishermen or small boat owner to start the fishing activities individually.
6. Skill based-training must be provided to the fishing community.
7. Insurance sector must get in touch with fishing community

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References;

- [1] M. S. Dhadave, Strategies for Rural Development in India, in. M.S. Dhadave, K.G. Joshi and S. G. Melkundi (eds.). Rural and Urban Studies in India, (New Delhi: Rawat Publications, 1996). 176 - 193
- [2] S. Patnaik and J. K. Baral, Socio-Economic status of fisher Women: Continuity and Change. (New Delhi: Social Publications, 2012).
- [3] M. Bavinck, Understanding Fisheries Conflicts in the South – A Legal Pluralist Perspective. Society and Natural Resources, 18 2005, 805-820.
- [4] Peter Swanborn, Case Study Research: What, Why and How?. (New Delhi: Sage Publications, 2010).
- [5] B. Metz, O. Davidson, R. Swart, and J. Pan, Climate Change 2001: Mitigation. (Cambridge: Cambridge University Press, 2001
- [5] Impact of Climate Change on the Fishermen's Livelihood Development: a case study of village in Coromandel Coast, IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 12, Issue 6 (Jul. - Aug. 2013), PP 49-54