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NATURAL HAZARDS AND DISASTERS: MANAGEMENT AT SAGAR ISLAND OF SOUTH 24 PARGANAS DISTRICT

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Abstract

In the south coast of India a part of West Bengal, Sagar Island is situated close to the epicentre of Amphan Cyclone. The Sagar Island is normally not located on the path of cyclone but due to its geomorphological region the island is very often affected by sea waves and cyclones. As the Island is a low line area, during cyclone and tidal surges the margins of the Island are normally inundated. Such incident was experienced during Alia cyclone. Sagar Island is one of the remote Islands of south 24 Parganas district. More than 40,000 people live in Sagar Island. The island is characterised by mangrove swamps extensive sea beaches in its souther portion and the flow of Muriganga and Hugly River of its Eastern and Western portion. It is very much prone to coastal flooding, coastal erosion, tidal surges, embankment breaching and cyclonic impact. The island already lost 30 km of land due to its openness to sea and river. The island is physically is most vulnerable and the people who are living there belongs to vulnerable community. This article mainly aims at the vulnerabilities of the communities living in Sagar Island and different management strategies. Management strategies were based on the occupational structures of the villagers.

Keywords: hazard, disaster, coastal erosion, vulnerable community, Management Strategies

INTRODUCTION

Sagar Island is one of the most vulnerable Islands of the Indian Sunderban. It is affected by the river erosion as well as the sea wave erosion. Sagar Island has a unique feature of rehabilitation shelter for the refugees. Some refugees come from Lohachara. They were rehabilitated in Bankimnagar and some in gangasagar. Some people were rehabilitated at Radhakrishnapur and Jibantala. Here on around 108 families' rehabilitated on naturally reclaim land by the old chemaguri river. In both gangasagar and Bankimm Nagar the refugees are under govt. care. Chemaguri settlement has been awarded a shield for mangrove vegetation owing to the plantation work done by Tagore Society for rural Development (Sagar unit). Major areas of erosion are Kachuberia, Dhablat, Beguakhali. The Ghoramara Island is eroding at rapid rate. Here erosion is caused by meandering nature of Muriganga and Hoogly River. Ghoramara, Muriganga-I, Dashpara, Sumatinagar-I, Dhablat, Gangasagar South are very prone to erosion. Sikarpur is almost toward its ends. Only 10-12 families are living here.

LOCATION OF STUDY AREA

Sagar Island is also known as ganga sagar which is situated in the Ganga delta. The Island is located almost 80 km south of Kolkata. Extension of the study area is 21.36' to 21.56' north latitude and 88.2' to 88.11' East Latitude. Total area of the study area is 224.3 sq.km. Sagardwip is separated by the branch of Hugli River i.e. Muriganga. This Island has a close proximity to the epicenter of the recent super cyclone Amphan.

OBJECTIVES

- To know about the geomorphological position of Sagar Island.
- Management strategies taken up by the Self Help Groups. To know about the role of Tagore Society for the Disaster Management in Sagar Island.
- To suggest a management strategy by using different occupational structure.

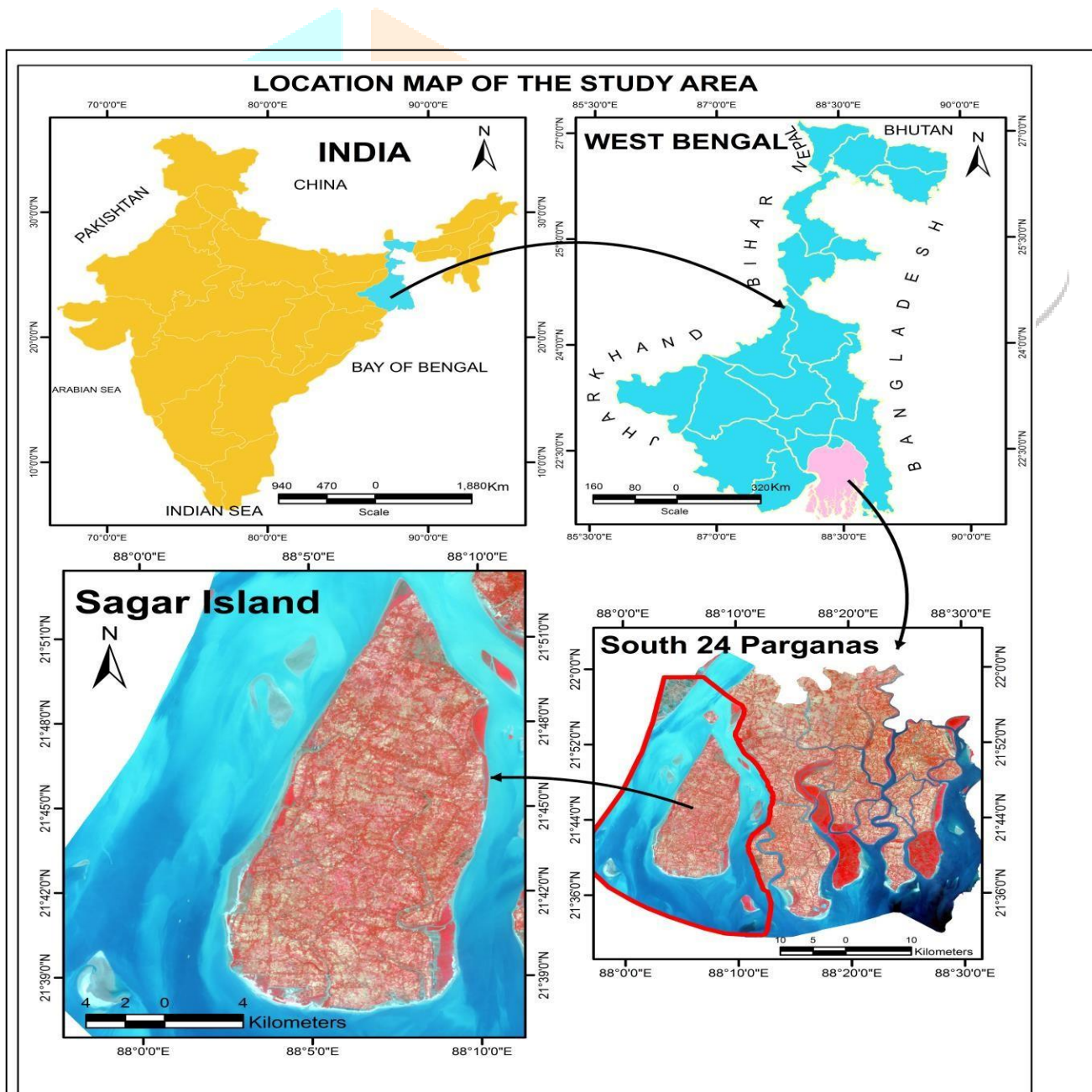


Figure 1.1: showing location Map of the Study Area

METHODOLOGY

The methodology used in this article is mainly a qualitative in nature. It is a qualitative analysis of Sagar Island regarding natural disaster management of that area. The study of the occupational structure of that area was also done with the help of field survey from local people inhabiting there. Field work was the survey related to the work of different Self Help Groups and other organisation. The series of natural disaster has been recorded which had taken place since last ten years.. Pre field work relates to identification of different hazard prone areas in Sagar Island and literature review of these similar works about South 24 parganas. Occupational structure of village dwellers has been enquired in order to suggest different management strategies. Suggesting the villagers to use different methodologies for disaster Management was the main theme of the post field work.

HISTORY OF NATURAL CALAMITIES: Sagar Island and its surrounding region:

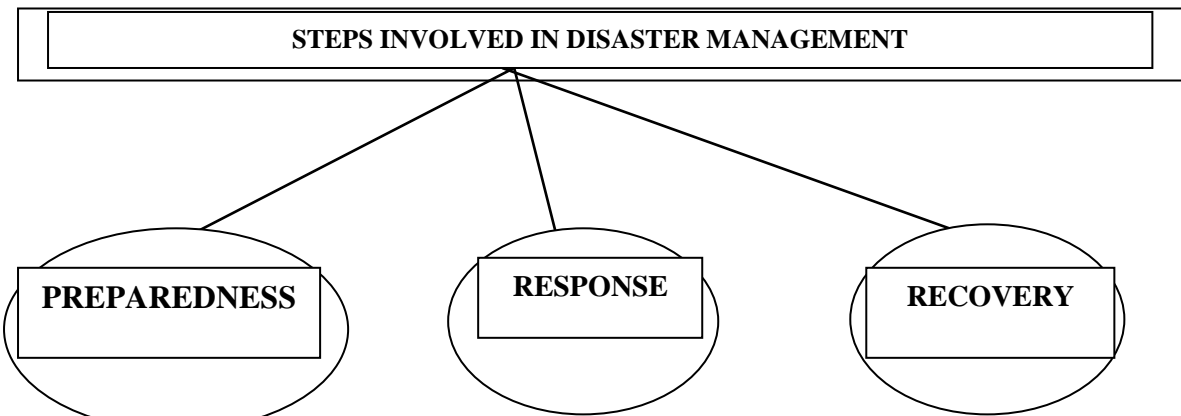
The geomorphological position of the Sagar Island made this region prone to vulnerabilities. Most of the cyclones have made its path directed towards west Bengal and other parts of India through this way, when depression in Bay of Bengal becomes the source of the cyclonic winds.

Table 1.1 Damages caused by different natural disasters in Sagar Island (1932-2019)

YEAR	TYPE OF NATURAL CALAMITY	AREAS AFFECTED	DAMAGES
(1932-1937), 1988,1989	Cyclone, vast area eroded and the island reduced in size	Bishaakhipur block	40 families were rendered homeless
1988	Tidal wave, 14m retreat of dune in single storm	Sagar island shibpur shoreline	Beach fringe dune shifted, 532 human life loss
1988, 1989, 1993, 1995	cyclone	Beguakhali shoreline of Sagar Island	Erosion in the lower beach face
(1993-1997)	Partial erosion by wave action	Muriganga channel bank	400 families were displaced from their residence
1993-1997)	Vast area erosion	Bakkhali region	198 families were displaced
1999	cyclone	West Bengal, parts of sagar and ghoramara Island	-
2006	Cyclone, Monsoonal rains and tropical cyclone driven storms	Parts of south 24 parganas and medinipore	50 deaths, 300 injuries, 30,000 mud houses destroyed
2009	Cyclone Aila	West Bengal; Close to the east of Sagar Island	149 People were killed, more than 15,000 people in eight villages were isolated
2019	Cyclone Bulbul	West Medinipur, Sagar Island and its surrounding areas	
2020	Cyclone Amphan	Amphan epicentre of landfall was near Sagar Island	72 people alone died in west Bengal, more than 100 homes displaced 2lakh people are still in relief shelter

SOURCE: Paul Ashis Kumar: Coastal Geomorphology and environment, acb Publication.

Page-(362,364). District Disaster Management Plan (South 24 Parganas, Govt. of West Bengal) 2000-21.



Disaster Management Act, 2005 mandates for the development of District Disaster Management Plan for every districts of the country. The plan of today marks a shift from a mere response based approach to a more comprehensive Preparedness, Response and Recovery approach in order to negate or minimize the effects of several forms of hazards by preparing better. The differences in geographical characteristics and climate conditions changes the impacts and type of hazards in every district and also, within the district. In order to better deal with this, it necessitates making good assessment of the Hazards, Vulnerabilities and Capacities in different parts of the district. Finally, a very comprehensive Hazard, Vulnerability, Risks and Capacity Assessment (HVRCA) were conducted by the District Administration of 24 Parganas (South). – **SOURCE:** South 24 Parganas Official Document

MAJOR FINDINGS

Sagar Island is one of the most vulnerable Islands of the Indian Sunderban. It is affected by the river erosion as well as sea wave erosion. Major areas of erosion are Kachuberia, Dhablat, Beguakhali. The Ghoramara Island is eroding at rapid rate. Here erosion is caused by the meandering nature of Muriganga and Hugli River. It is helpful to hold the landmass against river erosion in those areas since 1995, but gradually the conditions worsen. The plantation initiative has failed in Dhablat village, which was badly hit by Aila cyclone in year 2009. Sea Waves also heats this area and eroding at rapid rate. Beguakhali and Mahishamari are the worst affected areas due to erosion. After the Alia cyclone the people are living here at high risk level.

In Sagar Island more than 1000 families are engaged in different types of livelihood namely Agriculture, Prawn seed collection (Meen dhara) and fisheries. Pilgrimage based tourism also going on throughout the year. 80% of the total cultivable land is coastal low land. As the land is very saline, it is not possible for cultivation of paddy during dry season. Rain water harvesting helps cultivation in Sagar Island. Potatoes and ladies fingers are also grown at many parts at Sagar Island due to siltation of River Hoogly and Muri Ganga. Betel leaf is grown in about 2400 acres.

Fisheries are the second largest livelihood after agriculture. More than 500 families are engaged in beach combing and sea shell handicraft. The families living to the close proximity of the river embankment are related to this type of occupation. Some people engaged themselves in prawn or shrimp seed collection. Younger generation migrate to south India and Gujarat. This trend increased than previous year.

LIVLIHOOD DEVELOPMENT IN SAGAR ISLAND

- To save the people in the island from the impact of sea level rise, coastal flooding, erosion and many other social hazards, the means of livelihood of these communities should be developed properly. Although people of this island are engaged in different livelihoods but security of the livelihood is quite uncertain. About 80% of the families have their own agricultural land and per family posses atleast 3 bigha (measuring unit) of land. The entire island is a low land area. Global warming and sea level rise have huge impact on the island.

AGRICULTURAL DEVELOPMENT

- Agriculture is the main occupation of the people of this island. Fishery, Betel, Vine and Rabi crops are also grown here. As the land is very saline in nature so sometimes cultivation is not possible here. The younger generation is practising high yielding of variety of crops while the old generation is still using local species to grow crops. Rabi cultivation is mainly done with the help of pond water. In some areas of the of the block rainwater harvesting works are going on to increase the production of rabi crops. In this block Rabi crops include sunflower chilly, potato and other vegetables. Other than rice production chillies are grown in about 1200 acres. By selling chillies outside the Island the local people can earn money even in the winter season.
- The local farmers do not get sufficient money by chilly cultivation as the middlemen are exploiting the situation. Most than 13 hundred people are engaged in betel vine and the packing of the leaves provides employment for more than 4000 people in island the initial investment in betel vine per Bigha is 30,000-40,000. Most of the betel leaves are sold in Kakdwip and Kolkata market.

FISHERY DEVELOPMENT

- There are more than 300 trawlers in Sagar Island. The poorest people are engaged as fishing labour in the trawler and some people are engaged in pond fishing or brackish water aquaculture. During rainy season labour gets 40% share in the profit. During other seasons the labours are paid fixed wage of rupees 7,000-9,000 for three months. The ownership of the trawlers can increase returns to the fisherman. The ownership of the trawlers can increase returns to the fisherman. There is fisherman cooperative which is not very active. Today crab culture is picking up the market.
- People living near the embankment and who are unemployed they are engaged in prawn sheet collection. This activity hampers the marine ecology because catching this prawns using super fine net kills other marine lives. Some young children are engaged in such activity. At present some villagers practise brackish water aquaculture which is the alternative livelihood system other than agriculture.

Livestock is another asset of the rural households. Livestock in Sagar Island is declining due to lack of extensive grazing land.

There are about 64,000 cattle, 35,000 goats and 16,000 sheep, as against 85,000 plus cattle and 55,000 goats and sheep in the year 2001. After the Aila cyclone in 2009 for three consecutive years no crops were grown. During this time the local people got dependent on livestock farming yet the income was not sufficient so cow, goat, hen etc. are the alternative options for them. There is about 3 lac poultry bird in Sagar Island. The persons who have no agricultural land they are engaged in agriculture and construction labour shrimp seed collection, transport and ferry service, shell craft collection.

Coconut is one of the potential income sources of the island. The saline salt and coastal environment are favourable for planting coconut tree. Coconut trees are abundantly produced here so if the coconut can be sold outside of this island then income opportunities might increase. Palm jaggery is another potential livelihood option for the island dwellers.

SELF HELP GROUP:-

The most successful Self Help group is MAA SHARADA MAHILA SWANIRBHAR GHOSTHI. This group is working in Lalpur of Dublat Gram Panchayat. There are atleast 530-600 SHGs in Sagar Island which are working for social and economic development. After the inception of Swarna jayanti Yojana in 2000 some government aided SHGS are working to enable women empowerment as well as family welfare.

FOOD SECURITY

The people of the island are basically very poor in comparison to other district. The people who have two Bigha(measuring unit) or more land they are now adapting new farming techniques that promote food

security to them. The household dig up a small pond in their land. This pond is used to collect land water. During Rabi season pond water is used for irrigation. Apart from growing fish the ponds are also used for rearing ducks. The fish and duck provide protein security to the members of the family. The bank of the pond is also used to grow vegetables. In many villages of Sagar Island written trades of groceries have been developed by the people. These also contribute to the food security.

WWWF India and Ramkrishna Mission lokshiksha Parishad have come forward to enhance the opportunities of the people of the island.

TAGORE SOCIETY: WORKING FOR THE DEVELOPMENT OF LIVELIHOOD AND ENVIRONMENT OF SAGAR AND PATHARPRATIMA BLOCK.

Tagore Society for the rural development (TSRD) is one of the oldest and largest civil society organisation in the eastern india engaged in rural development since 1969. This organisation is working for more than 2801 villages spread over 47 Blocks of three States.(West Bengal, Orissa and Jharkhand). The organisation is led by Tushar Kanjilal, tthe National teacher awarded by the President of India. At Sagar Island of West Bengal (South 24 Parganas). Under Sagar Project work, 47 villages of Sagar and Patharpratima Blocks are served. It also aimed at making the women economically self dependent through self help group.

The number of population served by this project is 159,555. The major working income areas are:

- I.Greening
- II.School sanitation and hygiene education
- III.SGSY programme
- IV.Awareness through workshop, meeting and training
- V.Irrigation
- VI.Health

The Tagore Society for rural development initiated Sagar project in the year 1995. The Sagar Island is badly affected by the incidents of flood and cyclones. The project work is running in Sagar and Patharpratima block. This NGO is working at 46 villages. The Tagore Society for rural development is actively working and helping the development of livelihood options. The project aims to improve the livelihood of the poorest segment inhabiting in the Dhablat gram Panchayat, Sagar Block which includes sea erosion and tidal floods.

Figure 1.1 showing effects after two major Cyclones; Amphan and Bulbul at Sagar Island



After effect of Bulbul Cyclone at Sagar Island



Military jawans and common people trying to move the large tree to save the electric cables



Inundation by river during high tide accompanied by cyclone



Uprooted mangrove trees in Sagar Island after Amphan

Breaking of the boulders due to excessive swash of the tides and flooding of the roads



This organisation is also working for the development programme Sagar block supported by the World Bank through ICZM-West Bengal. Multipurpose cyclones and flood shelter have been developed by the government. Apart from these during AMPHAN also the organisation arranged for security and shelter for the dwellers.

CONCLUSION

Disaster Management is an integrated approach where all the stake holders must act in a collective manner. The benefit will reach to all the people of the target gram Panchayat in terms of knowledge and capacity building of the people's institution. Approximately 3000 households will get higher economic return from the project fund support. The project benefits include Community based Institutions like SHGs to Federation. The community participation is the soul set up of management strategies of these areas because it's all about staying and doing. Further management seeks the integration between government and community residing there.

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