

Flood Hazard : Due to
Embankment Breaching, It's
Impacts And Management Of
The Southern Part Of South
24 Parganas District, West
Bengal.

INTRODUCTION

A hazard is an unexpected threat to human and their property. The atmospheric hazard are related to weather and climatic extreme events. Hazard are the process where disasters are the result. Tropical cyclone become more disaster natural hazard because of their high wind speed of 180 to 400 km/h, high tidal surges, high rainfall intensity and their persistence for several days. The present study is regarding the vulnerable embankment and climatic hazard and its impact on local community of the Nischintapur of South 24 Parganas.

STUDY AREA

South 24 Parganas is a district in the Indian state of West Bengal, headquartered in Alipore. It is the largest district of West Bengal by area and second largest district by population. It is the sixth most populous district in India out of 640. On one side of the district, there is the urban fringe of Kolkata and on the other, the remote riverine villages in the Sundarbans.

Nischintapur is a village within the jurisdiction of the Kulpi police station in the Kulpi CD Block in the Diamond Harbour subdivision of the South 24 Parganas in the Indian state of West Bengal.

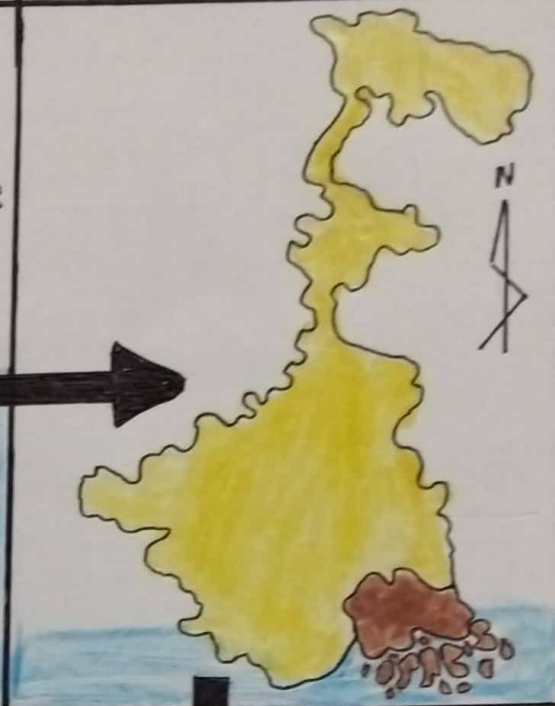
Nischintapur is located at $21^{\circ}59'25''\text{N}$ $88^{\circ}12'55''\text{E}$. It has an average elevation of 6 metres or 20 feet.

STUDY AREA

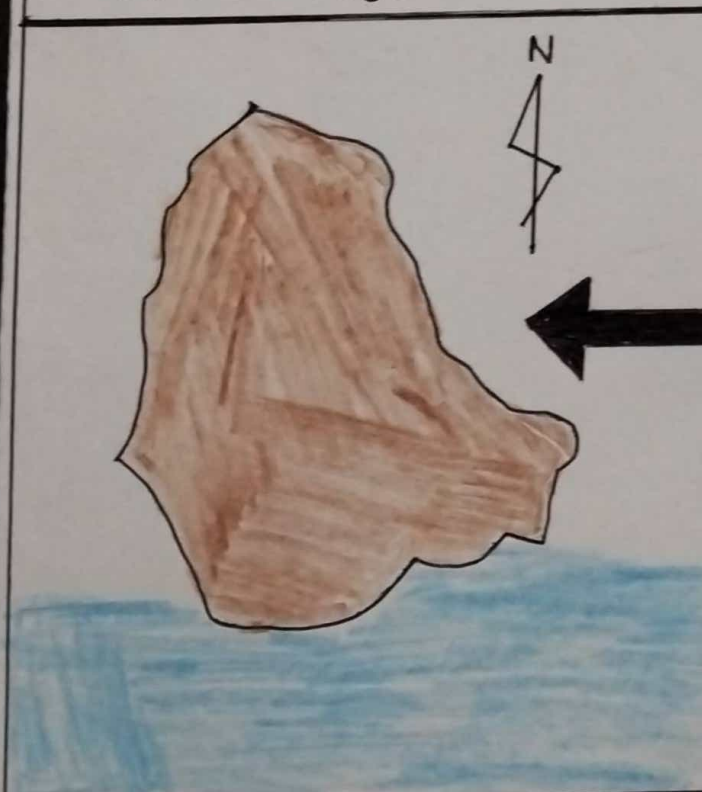
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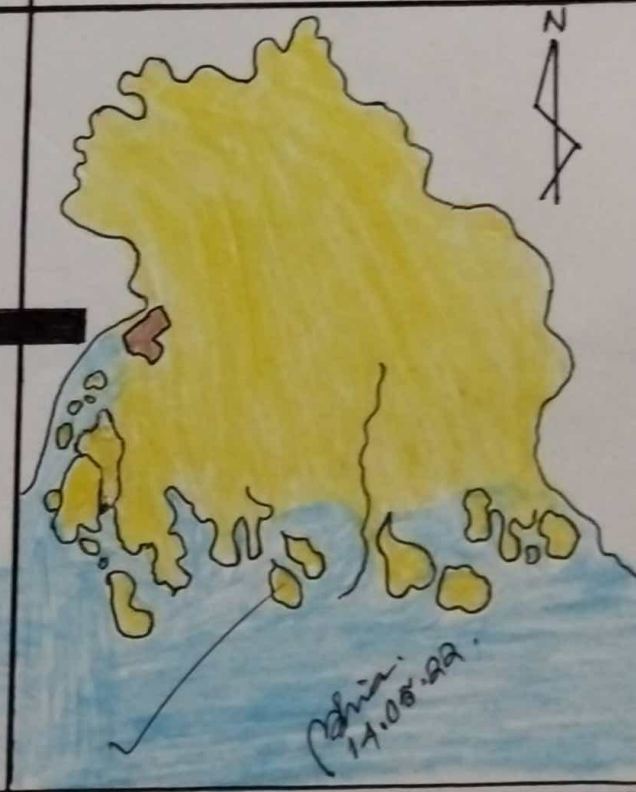
West Bengal



Nischintapur



South 24 Parganas



OBJECTIVE OF THE STUDY

The Present Study has been undertaken with the specific objectives which as following:

- To examine the vulnerable embankment of Sagar block of South 24 Parganas district.
- To assess climatic influence on vulnerable embankment.
- Risk and vulnerable analysis of the block.
- To suggest alternative strategies of reduce the extent of breaching and its impact.

DATABASE AND METHODOLOGY

This Study is based on secondary data. Map and census data collected from internet. District Disaster Management Plan 2015 collected from the internet. The successive stages of method logies are simple but scientific.

IMPORTANCE OF EMBANKMENT

Human settlement in the Sundarbans has been possible only because embankment. Importance of embankment in the life of local people of the Sundarbans Island is so great that the embankment may be considered as savior the 'Life Line' to them. Survival of human society in this area is entirely depend upon embankment and Sagar is not an exception. Most of the people in the study area are economically weak and engaged in primary activities determined by natural environment like agriculture, fishing etc. It protect the agricultural land, source of sweet drinking water and fisheries from the ingresses of saline water.

TYPES OF EMBANKMENT

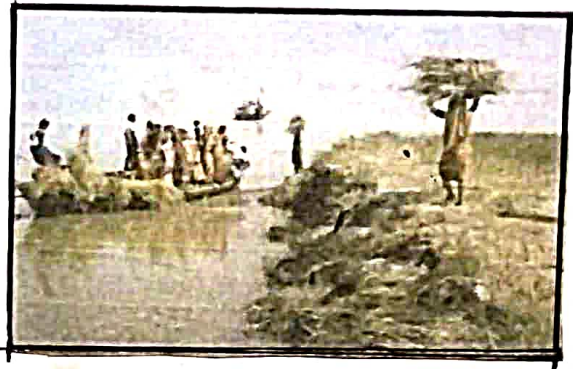
In the study area four main types embankment can be seen along the different river side.

These are,

- Earthen embankment.
- Earthen embankment with bamboo fence.
- Earthen embankment with bamboo fence and sand fill bag along the embankment.
- Boulder Pitching or concrete Pitching embankment



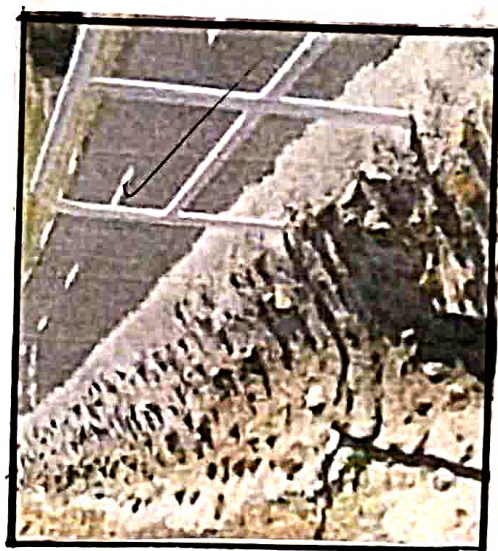
Boulder Pitching embankment.



Earthen Embankment



Earthen Embankment with Bamboo fence and sand fill bag.



Concrete Pitching embankment

Examined

TABLE:1 Factors and Elements of Breaching of Embankment

Factors	Elements
Nature of Currents	• Nature and extent of discharge. • Velocity and shear stress. • Presence of Eddy currents.
Embankment material	• Texture and cohesiveness of material
Climate	• Nature of Rainfall • Duration of Rainfall • Dry and wet cycle
Geology	• Permeability • Nature of soil moisture • Presence of capillary water.
Geometry of the channel	• Shape, breadth and depth of the valley • Height of the bank • Sinuosity of the meanders
Biotic Factors	• Nature and density of natural vegetation • Biological Activities
Anthropogenic Factors	• Settlement, urbanization, transport and artificial drainage system • Change in land use/Encroachment of creeks. • Artificial dike for protecting channel bank • Wrong techniques and methods of embankment • Improper implementation and negligence in work

TABLE:2 Impact of Breaching Elements

Direct Impact	Indirect Impact
• Shifting of Bank lines • Reduction in vegetation cover • Loss of wetland • Loss of Fisheries • Loss of Settlement • Loss of agricultural land • Loss of orchards • Loss of human lives • Loss of domestic animals.	• Changes in eco-system • Changing in occupation • Increase trends of out migration • De-Population • Threat of survival • Vulnerability to girl/women trafficking • Decrease in area of land eco-system

SUGGESTIVE MEASURE TO REDUCE PROBLEMS

As the constitution of human society in Sundarban is associated with existence of the embankments, management of the embankments are very crucial. But it is true that there is no permanent solution to protect the island from severe erosion. There are some possible way to reduce the impact of embankment breaching.

- Identification, mapping and classification of vulnerable areas as well as embankments of the Island should be done primarily by using modern techniques, equipments and empirical survey before formulation of any Plan.
- The vulnerable embankments must monitored and repaired at regular interval. It should be protected by brick pitching or block pitching. Protecting the embankments of the Island by concrete structure instead of earthen material must be given importance as suggested by the Islanders themselves.
- The creeks should not be obstructed by any construction and land use rather they should be excavated to allow widenspill area to reduce hydrostatic pressure on embankment.
- Settlement and agricultural activities should be avoided in the frequently flooded areas to reduce the loss of resources. Settlement must be removed from the embankment sites.
- Another possible way to protect embankments is to construct natural green guard walls through regeneration and plantation of mangroves may fruitfully protect the bank from tidal.

CONCLUSION

Breaching of embankment has damaged the livelihood support system of the local community of 'Sagan' through damaging of agricultural land, fisheries, betel orchards along with inundating roads and settlement. It can be concluded that the marginal groups of the one under review line in a measurable condition and are more threatened by the physical hazards. The embankment have become inseparable and iconic to this area. Thus sustainability of life, economy and cultural area has been now conditioned by the embankment. The security of the cultural economy system and the people in the guaranteed only when the sustenance of the embankment is secured. Proper coastal zone management combined with local peoples, awareness and participation can protect the public and private organization should be participants to sustain the embankment in order to sustain them selves.

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Date: 14.05.22.

Examined