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Effects of Floods on an Industrial town-Ichalkaranji.

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Abstract - *Natural calamities are a vital aspect for any civilization especially for the underdeveloped and developing ones. Disasters like floods can totally erode the livelihood of the people. They imbibe an irreparable damage to the mental health and somewhat repairable damage to the property of the people affected by them.*

The present study aims to explore the aftermath of the 2019 floods in an Indian industrial town named Ichalkaranji. The town is located in western region of Maharashtra state of India. The primary occupation of people here is Textile Industry and its allied fields. The town has a population around half a million and the business was completely stopped during the recent floods resulting in huge monetary losses of the residents. The data collection was done from Questionnaire based survey, ArcGIS, GPS and local corporation data. Thus the study provides a base for further actions needed to be taken in order tom prevent damages in upcoming floods.

Key Words: Disaster Management, Floods, GIS, Impact analysis, Socio Economic

1. INTRODUCTION

Natural hazards such as flooding can lead to global disasters that hamper nations' growth and impact many parts of the globe. Most countries worldwide, especially Asian and African countries, do not have adequate methodologies for estimating losses due to natural disasters. In order to develop rational flood policies based on cost-effective measures, information on the estimation of losses caused by floods of various magnitudes and the loss return period is crucial.

The Western part of Maharashtra state in India faced severe floods during the period July 2019 to August 2019.The severity of floods was greater than the past 54 years. Particularly Kolhapur and Sangli districts were the mostly affected by these floods. In Kolhapur district alone more than 1.32 lakh people had to be migrated to safe places.

The selected area for the Impact analysis was an Industrial city named Ichalkaranji in Kolhapur district .Textile Industry is primary occupation for most of the people in the city. The primary water body nearer to the city is Panchganga River which lies about half mile south to the city.

1.1 Study Area

Ichalkaranji (Hatkanangale T.; 16° 40' N; 74° 25' E; p. 27.423; 8.7 square miles) lies about 18 miles (29 km) east of Kolhapur in the Panchganga valley and half a mile north of the river. It is 6 miles (10 km) south-east of Hatkanangale Railway Station.

Ichalkaranji is one of the fastest-growing industrial areas in Maharashtra and has even been called the "Manchester of Maharashtra." The blending of the culture from all parts of India is a cosmopolitan city by proper means. The economic system of the city is driven mainly by the fabric industry.

The textile industry is mainly dominated by local producers and Marwari (Rajasthani) traders, mostly from the district of Bikaner & Nagour. Engineering is the second largest industry in the city. There is a fair deal creative agriculture in the area surrounding the city. Almost every bank in India has a department in the city. Textile goods made in the metropolis are sold in India as being properly shipped to a variety of parts of the world.

2. METHODOLOGY

The methodology included data collection in the form of GIS data, GPS data, Questionnaire survey data and data from local Government corporation body. The data collected from these sources was then analyzed.

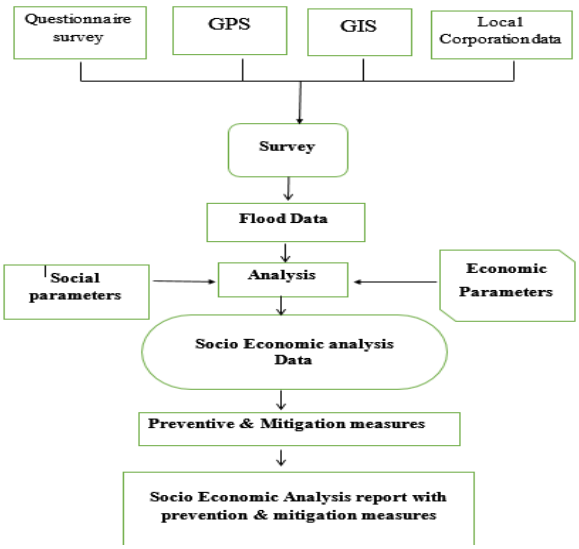

Chart -1: Methodology followed

2.1 Economic Impact Analysis:

Impact on Small shops and other businesses: There are many small stores and businesses in the residential area that have been hit by the flooding. These stores had been highly affected since there was very few time and possible means to resettle the commodities that are fungible and could be ruined by water.

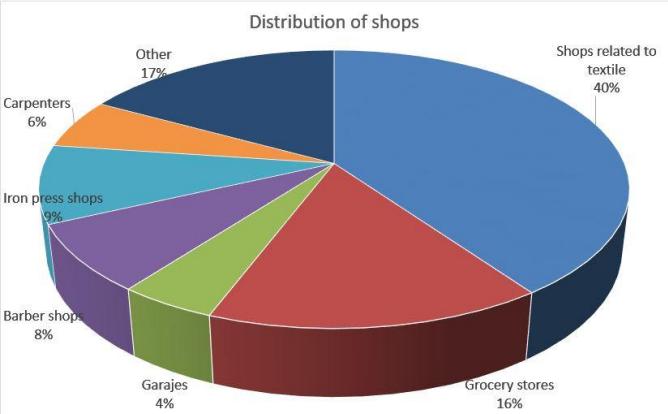

Chart -2: Distribution of small businesses and shops

The damage to the stores in terms of damage to goods, equipments, furniture, etc. was predicted from the survey conducted by the Ichalkaranji city council under the supervision of Hatkanangle Tehsil office.

Impact on Houses: Almost 1,200 homes were hit by the flooding. The period of the flood water, the height of the submersion, the type of building, etc. have a crucial role to play in the damage done to the structure.

The damage done to the houses is interpreted in two ways Government data and individual survey. The divergence in data is found out that if any so that the damage could be accurately assessed.

Impact on Power loom Industry: Power loom industry, that is. The textile industry was the sector most affected by these floods. The conventional textile configuration consists of a Power loom in a set of 10 looms, a reed device and a sprayer.

The total number of power looms affected due to these floods is around 9500 and the total monetary damage to these looms was around 24 Crore INR. The relief fund given by the government was merely 6% of the total damage occurred.

2.2 Topographic analysis

Topography is the study of the shape and features of land surfaces. Topography of the region can refer to surface shapes and features themselves, or a definition (notably their representation in maps). Topographic survey includes DEM, Contour Modeling and TIN Modeling.

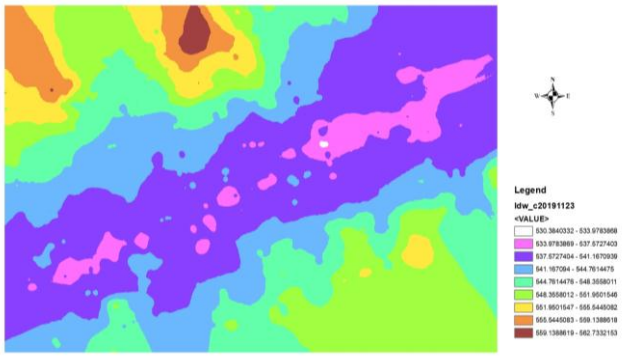

Fig -1: Digital Elevation model of flood affected area

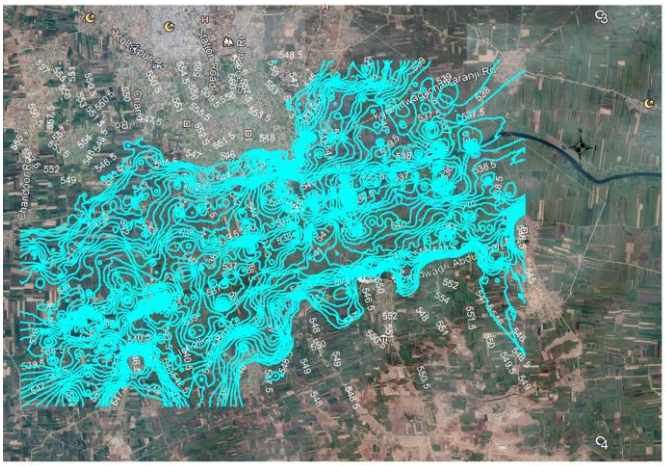

Fig -2: Flood affected area using contour mapping

3. CONCLUSIONS

The research shows that the consequences of 2019 floods have been catastrophic and the recovery time after the floods is very long which tends to be approximately 1 year. Most of the population depends on the textile industry for their livelihoods and, as a result, almost the entire city is influenced by the textile sector. GIS, GPS and flood data will be used for further research to minimize disruption to potential flooding.

The expansion of the population is parallel to the flow of the water, so the only possible technique would be to mitigate floods. There is a need for a cheap and reliable early warning system so that people can deal with the flooding. The incorporation of these data into the early warning system will be more efficient in the mitigation of useful items, such as cloth and yarn.

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