DISSERTATION

ON

"Assessing the effects of flood on the livelihood of the residences of Nilapur village under Patashpur-1 block in Purba Medinipur district of West Bengal"

M.Sc. Semester-IV Practical Examination-2023

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CERTIFICATE

This is to certify that **MS. Tanuka Maity** Roll- **PG/VUEGG19/GEO-IVS** No. **010** has prepared a dissertation work on **" Assessing the effects of flood on the livelihood of the residences of Nilapur village under Patashpur-1 block in Purba Medinipur district of West Bengal"** under my guidance and supervision for M.Sc. Semester-IV, Examination in Geography, 2023 as a partial fulfilment of the curriculum of Vidyasagar university in geography paper 496.2 it is further certified that this is her original work and no part of this work has been submitted elsewhere before for the awardment of any degree.

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Tanuka Maity

Date: (11/08/2023)

Signature

PREFACE

The report is prepared as a part of M.Sc. final semester Geography honours curriculum and in order to gain knowledge about how to conduct a survey. We were required to prepare a report on effect of flood disaster. The basic objective behind doing this project report is to get knowledge about disaster and understand its management strategies.

Doing this project report helped us in understanding good and how it impacts the life of human and flora and fauna of the of the studied area. Through this report, we understand about different aspect of a research and how they are undertaken and also understand the importance of research and field work in the subject geography. We also understand the research and field work in the subject geography.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTO PLATES

CHAPTER-I

Introduction

1.0 Introduction:

Flood is one of the most devastating natural disasters that affect many regions around the world year after year, causing massive damages to natural and man-made features, loss of lives, damaging economies and human health. More than one third of the world's land area is flood prone, affecting about 82% of the world's population. Due to the increased encroachment in flood plains, the frequency and intensity of flood get increases day by day affecting more population and causing greater economic loss. A flood is usually caused by rain, heavy thunderstorm and throwing of snow. It's considered to be a temporary condition of two or more acres odd dry land either: Overflow with inland or tidal water, Rapid or runoff of surface water, mudflow. Sometimes a flood occurs from collapse of land along the shore of a lake, river or any another body of water. Flood disasters destroy may livelihoods of its occurrence place. A number of criteria determine the dangers of a flood. Patashpur-1 block is the most flood affected area of Purba Medinipur district in the state of West Bengal. These floods are occurring at the south west monsoon period spread from June to September. Patashpur-1 block is mainly affected by Keleghai River. Occurrences of flood in large area of about 17226 hector. Comprise 9 Panchayet and 140 villages. I have done a study on the effect of flood on the livelihood of Nilapur village.

1.1 Objectives:

The main objectives of field study are to find out a hidden, undiscovered truth. The various objectives are-

1. Assess the physical background of the study area.
2. Finding out the cause of flooding in that area.
3. Determining the impact on livelihoods due to flooding.
4. Clarify the demographic characteristics of the study area.
5. Determine the relationship between economic condition and social status of the study area.
6. For planning sustainable agriculture.
7. Planning for communication system at the flood time.

1.2 Literature review:

- Merz, B., Kreibich, H., Schwarze, R., & Thickens, A. (2010) in their research paper "Assessment of economic flood damage" has shown the estimation of economic flood damage is gaining greater importance as flood risk management is becoming the dominant approach of flood control policies throughout Europe. This paper reviews the state-of-the-art and identifies research directions of economic flood damage assessment. The results of damage assessments depend on many assumptions, e.g. the selection of spatial and temporal boundaries, and there are many pitfalls in economic evaluation, e.g. the choice between replacement costs or depreciated values. In our view, flood risk assessments are often not well balanced.

- Milojevic, A., Armstrong, B., Hashizume, M., McAllister, K., Faruque, A., Yunus, M., ... & Wilkinson, P. (2012) in their research paper "the Health Effects of Flooding in Rural Bangladesh" has shown that Floods are the most frequent natural disaster. They have affected 2.8 billion people during the past 30 years1 and killed 200,000. They estimated the pattern of mortality, diarrhea, and acute respiratory infection following the 2004 floods in rural Bangladesh. They conducted controlled interrupted time-series analysis of adverse health outcomes, from 2001 to 2007. They found little evidence of increased risk of diarrhea or mortality following the floods, but evidence of a moderate elevation in risk of acute respiratory infection during the 2 years after flooding.

- Banerjee, L. (2010) in his research paper "Effects of flood on agricultural productivity in Bangladesh" shows that the impact of floods on agriculture in Bangladesh and argues that, although severe inundation destroys crops in the monsoon flood months, monsoon floods act as an open-access resource in supplying irrigational input to agriculture. District-level rice and jute productivity data for the period 1978–2000 are analysed to investigate the long-term impacts of floods in terms of agricultural performance, comparing "more" flood-prone districts with "less" flood-prone districts. In addition, the short-term impacts of floods are analysed on crops grown in the flood months and in subsequent, post-flood months. The results show that the area under cultivation and agricultural productivity are higher in the "more" flood-prone districts of Bangladesh. They also show that, while yield rates decline when floods assume "extreme" proportions, productivity increases during "normal" floods and in the post-flood months.

- Das, R., & Samanta, G. (2022) in their research paper "Impact of floods and river-bank erosion on the riverine people in Manikchak Block of Malda District, West Bengal" has shown that Floods and river-bank erosion are the most frequent natural hazards in India, specifically in the deltaic regions. In West Bengal, foods and river-bank erosion predominantly affect Malda district as it is located in the moribund part of the Bengal delta. In this research paper both primary and secondary data have been used. Large numbers of people are displaced every year due to loss of land. Failure in facilitating the required assistance in the form of alternative spaces for resettlement and other disaster-mitigating public support systems against these hazards would make it impossible for the deplorable condition of the vulnerable people to improve.

- Shil Sharma, S. K. (2011) in his research paper "Causes and effects of flood in Coach Bihar district, West Bengal" has shown that The District is much prone to flood. More than half of the area and little less than half dweller of the District are living in flood affected areas especially in the remote villages. Flood is a yearly problems as well as burden for inhabitant of the District, but it is an unavoidable also. The economic prosperity of the District mainly depends on flooding effects as it comes in each and every year. More or less all people of the District suffer due to flooding since the ancient period. But there is very little information as well as works about flood like disaster in the District.

- Gayen, S., Villalta, I. V., & Haque, S. M. (2022) in their research paper "Flood Risk Assessment and Its Mapping in Purba Medinipur District" West Bengal, India has shown that Floods are one of the most common quasi-natural hazards in costal districts of West Bengal, India and thousands of people are affected every year. From the destruction of crop lands and buildings to the disruption of balance of the environment and the spreading of disease, floods can devastate entire regions. The risk of flood depends on the flood intensity, frequency, and duration, the vulnerability of the people, etc. From the analysis, Moyna emerges as the highest flood risk prone block and Contai-I is the least flood prone block of the district. The results can help to minimize the chances of death, injury, loss, or harm and establish a good disaster management plan against floods.

1.3 Data Sources and Methodology

1.3.1 Sources of Data

Secondary Data Source:

- To understand the chronological development of the study area literature review have been done from different books, articles, research papers and web pages.
- Physical background of the study area has been studied from different articles and web pages.
- To understand the demographic background of the study area secondary data have been collected from Primary Census Abstract, 2011 and District Census Handbook, 2011.

Primary Data Source:

- Intensive door to door survey has been carried out covering total 80 household at ward no. 10 of Nilapur village, Purba Medinipur.

1.3.2 Methodology:

Objective-wise methodology of field report are-

1. **Assess the physical back ground of the study area.** The methods of data collection are

   a. Georeferencing
   b. Digitization
   c. Digital Elevation Model
   d. Contour Mapping

2. **The study aims to clarify the demographic characteristics of the study area. The methods of data collection are**

   a. Primary data collection through questionnaire.
   b. Secondary data collection from census handbook.
   c. Cartographic and statistical methods.

3. **Understand the different phases and chronological development of study area. The methods of data collection are**

   a. Secondary data collection from different Website, Book, Journal and Articles.

4. **The study seeks to examine the basic urban amenities available in the study area. The methods of data collection are**

   a. Primary data collection through questionnaire.
   b. Secondary data collection from different website, book, journal and articles.

c. Cartographic and statistical methods for data analysis.

5. **Determine the relationship between economic conditions and socioeconomic status.** The methods of data collection are:

a. Primary data collection through questionnaire.
b. Secondary data collection from different website, book, journal and articles.
c. Cartographic and statistical methods for data analysis.
d. Modified Kupuswamy scale of socio-economic status.

Objective-wise methodology of field report are:

Objectives	Methods	Data type	Data sources
Assess the physical back ground of the study area	Georeferencing Digitization Digital Elevation Model Contour Mapping	secondary data	Census of India, Household survey
The study aims to clarify the demographic characteristics of the study area	Cartographic and statistical methods.	Primary and secondary data	Households survey
The study seeks to examine the basic urban amenities available in the study area.	Cartographic and statistical methods.	Primary and secondary data	Households survey
Determine the relationship between economic condition and social status.	Cartographic and statistical methods, Modified Kupuswamy scale of socio-economic status.	Primary and secondary data	Households survey

House-Hold Survey

We collect primary data through intensive door to door household survey with the help of structured questionnaire.

To fulfill the objectives of the study, data on socio-economic factors (level of education, Occupation, income, expenditure pattern of the family, household assets etc.) were collected from Nilapur of Purba Medinipur.

❖ Cartographic and Statistical analysis

- We have compiled all the primary and secondary data and tabulate the data to prepare master table. After that analyzed data for preparation of diagrams and subsequent analysis.
- Statistical analysis has been done. We have drawn some cartograms by suitable cartographic techniques.
- Map of Study area has been done by Arc- GIS 10.3 software.

❖ Sex ratio

The **sex ratio** is the ratio of females to males in a population. Sex ratio has been carried out by using this formula

$$\text{Sex Ratio} = \frac{\textbf{Female Population}}{\textbf{Male Population}} \times 1000$$

❖ Literacy rate

Literacy rate is defined by the percentage of the population of a given age group that can read and write. Literacy rate has been calculated by following formula

$$\text{Literacy rate} = \frac{\textbf{No.of Literate Population}}{\textbf{Total Population}} \times 100$$

❖ Dependency Ratio:

The dependency ratio is a measure of the number of dependents aged zero to 14 and over the age of 65, compared with the total population aged 15 to 64. This demographic indicator gives insight into the number of people of non-working age, compared with the number of those of working age. The dependency ratio has been calculated using the following formula.

Dependency Ratio = [(Total Number of Children under age 14) + (Total Number of Senior Citizens above age 65)] / Total Number of People from the age group of 15 to 65 *100

❖ Software use:

- **ArcGIS:** It is a geographic information system (GIS) for working with maps and geographic information. It is used for creating and using maps, compiling geographic data, analysing mapped information, sharing and discovering geographic information, using maps and geographic information in a range of applications, and managing geographic information in a database.

- **Ms-Excel:** We have compiled all the primary and secondary data and tabulate the data to prepare master table with MS-Excel. For the interpretation of data and subsequent analysis we have prepared different diagrams with the help of MS-Excel software.

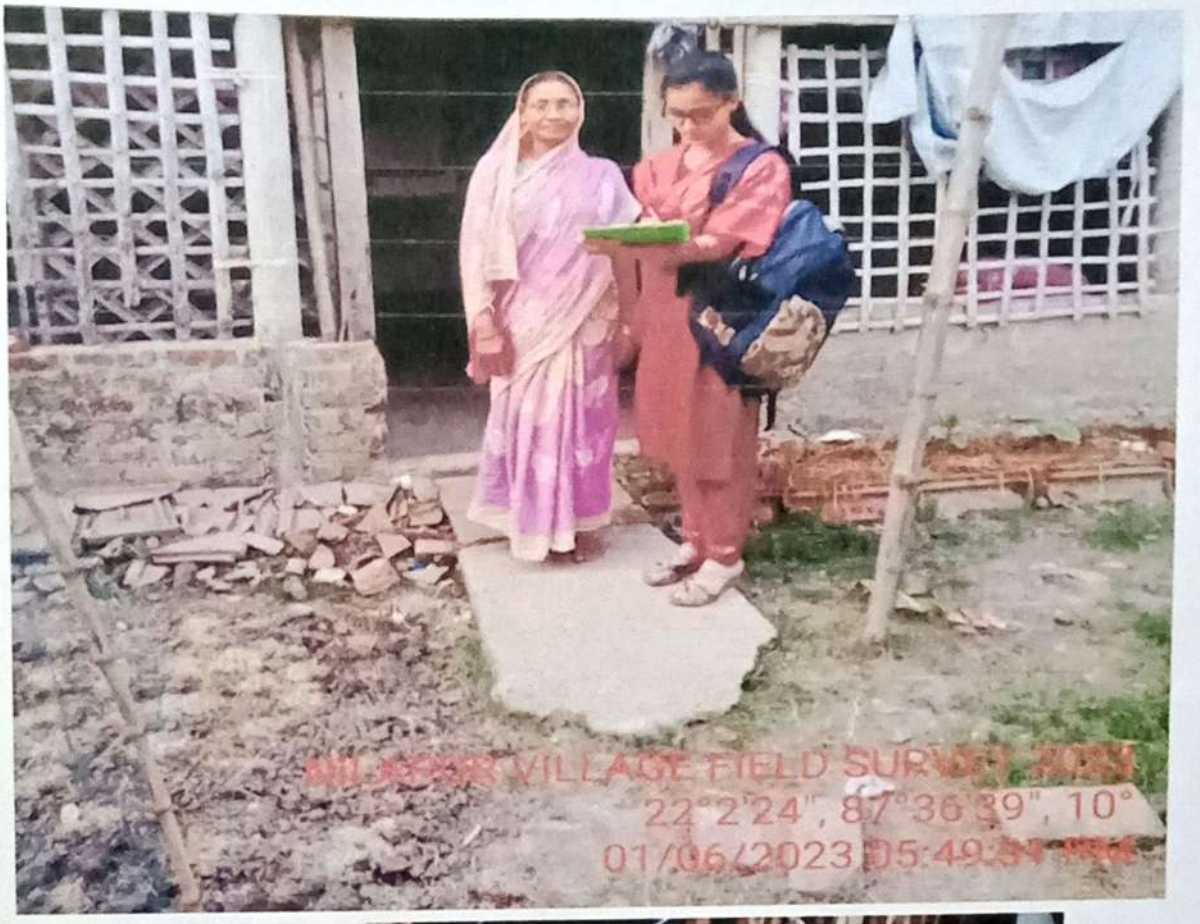

Plate No: 1 Household survey

CHAPTER – II

About the study area

2.0 Location of the study area:

The present study area is located in the Purba Medinipur district of West Bengal, India, which is identified as one of the flood prone areas in the state. Patashpur -1 block is one of the most agricultural block of East Medinipur. Pataspur-1 is a community development block that forms an administrative division in Egra subdivision of Purba Medinipur district. The absolute location 22°03'0" to north latitude and 87°37'0" east longitude. Patashpur-1 community development block consists of rural areas only with 9 Gram Panchayet. Barhat Gram panchayet is the part of Patashpur -1 block. My study area Nilapur village is the under of Barhat Gram Panchayet.

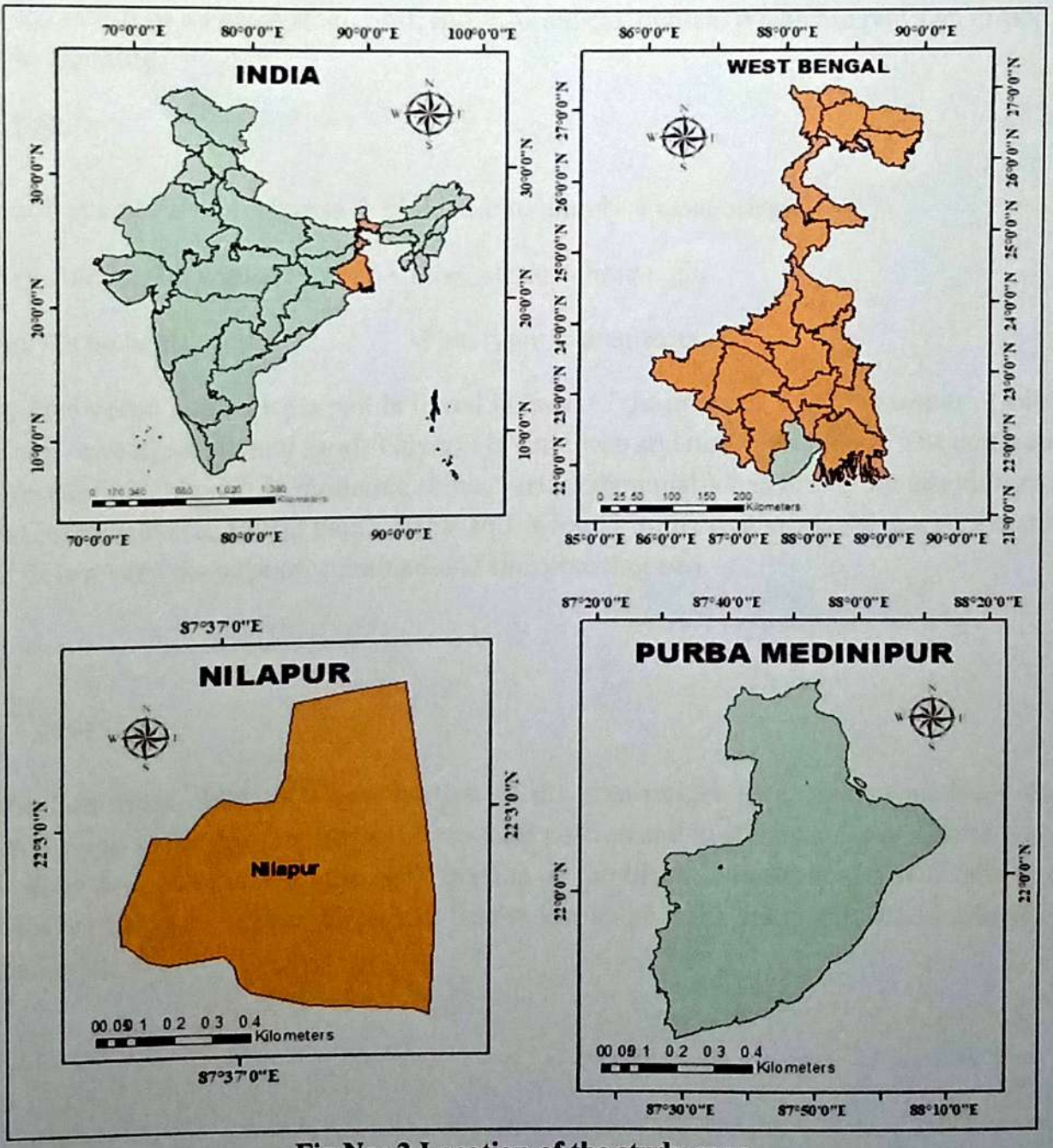

Fig No: 2 Location of the study area

2.1 Selection of the study area:

Patashpur – 1 block has been severely flood affected by the Keleghai River. This flood inundates the major portion of Patashpur – 1 block 9 Panchayet & 140 Disaster management 5 villages. Amarshi – 1 & 2, Brajalalpur, Chistipur – 1 & 2, Gokulpur, Gopalpur are highly flood affected & Naipur, Barhat are moderately affected. I have selected my study area because it is under Barhat Gram Panchayet which is a flood prone area, so it will be convent for me to collect and research flood related data and since it is my own village that's why peoples can communicate with me well and can easily give me field related information.

2.2 Physical status:

These attributes such as climate, soil, water, drainage, vegetation type etc. are fundamental characteristics of an ecosystem. Soil, Slope, drainage, climate which are plays an important role in flooding.

2.2.1 Soil:

The soil type of the block area is divided into mainly 4 categories:

- Very fine, vertic haplaquep.
- Fine, vertic ochraqualfs.
- Fine vertic haplaquepts.
- Fine typic haplaquepts.

Very fine vertic haplaquepts soil is found in most of the areas of these Patashpur- 1 block. The soil have more silt and sand. This soil is very deep and not well drained. The cultivation and erosion of this soil is moderate. Fine, vertic ochraqualfs has low lying alluvial plains with clayey surface. Vertic haplaquepts soil is found in the east north portion of the study area. It is a very deep, poorly drained and fine cracking soil.

2.2.2 Slope:

In the Patashpur- 1 block major portion of the area ranges from low to medium slope pattern. High slopes are situated in north- west portion and in some places of southern area. The study area is located in the N-W portion of the block. Patashpur- I block falls under the lower catchment area of Keleghai. So the low slope areas are mostly flood affected in monsoon time.

2.2.3 Drainage:

The Patashpur-1 block has a good network of drainage system. The Keleghai River is situated in the upper portion of the patashpur-1 block. The study area is the nearby the Keleghai river, just a few kilometers almost 9km. The Keleghai River originates at Baminigram. It flows past Keshiary, Narayangarh, Sabang and Patashpur to join the Kansai at Tangrakhali under Mahishadal police station of Purba Medinipur district. The combined stream is called Haldi, it is 121km long. Keleghai river portion of patashpur-1 block have very low gentle slope. So in this portion more deposition of sand, silt etc. happens. So, the Keleghai river portion of patashpur-1 block water has a very low run off at the monsoon time. That is why Keleghai River is characterized by heavy flood discharge within a very short span of time particularly in the monsoon time.

2.2.4 Climate:

The study area has a tropical monsoon climate-hot summer & well distributed normal rainfall. There are mainly four seasons found. The winter season starts from about the middle of December and continues up to the end of February and summer extends up to May. The south west monsoon season continues up to the end of September, October and the first half of November is the post monsoon. The study area is highly affected by flood in monsoon season.

Temperature:

Temperature rapidly rises from about early March. May is the hottest month with a mean daily temperature of 320 C. The mean annual temperature is nearly 270C. The temperature rapidly decreases in January. The mean temperature is nearly 19.70C. January is the coldest month of the year.

Rainfall:

The average annual rainfall is 275 to 300 mm. Rainfall decreases hot weather. Considerable amount of monsoon rainfall occurs in association with the movement of Cyclonic depression from the Bay of Bengal. It rains heavily from June to September. Patashpur– I is mainly flood affected in monsoon time.

CHAPTER – III

FLOOD HAZARD

3.0 Background of the study area:

The present study area is located in the Purba Medinipur district of West Bengal, India, under the Patashpur-1 block. Patashpur-1 community development block consists of rural areas only with 9 Gram Panchayet. Barhat Gram panchayet is the part of Patashpur -1 block. My study area Nilapur village is the under of Barhat Gram Panchayet. According to census of India in the study area the total number of household is 130, where total number of male population is 274, and total number of female population is 240. The village is cover with dense vegetation. Agriculture is the main occupation of the peoples. In my study area is high flooded area, the level of intensity of flood is almost high in there. The south west monsoon season continues up to the end of September, October and the first half of November is the post monsoon. The study area is highly affected by flood in monsoon season. The village is mainly flooded by Keleghai River. So, the Keleghai river portion of patashpur-1 block water has a very low run off at the monsoon time. That is why Keleghai River is characterized by heavy flood discharge within a very short span of time particularly in the monsoon time.

3.1 Reasons of flood:

A relatively high flow or stage in a river, marked by higher than the usual, causing inundation of low land or a body of water, rising, swelling and overflowing land not usually covered is termed as flood. Flood is probably the most devastating, widespread and frequent natural hazard of the world. This problem is more acute in the areas under strong monsoon regime where 80% of the total rainfall is received in just 3 months. It is evident that the problem of river flooding is getting more & more acute due to human intervention in the flood plain at an ever increasing scale.

The village is mainly flooded by Keleghai River. Due to heavy rainfall in this area the river over spills which causes flood hazard. It rains heavily on the river catchment in monsoon time. So this area is heavily flood discharged within a very short span of time.

Other reasons are –

- Due to over sedimentation, the run-off of the river has decreased.
- Due to the gentle longitudinal slope of the river bed it has lost drainage efficiency.
- Different types of human activities on river embankment.

RIVER SYSTEM IN PURBA MEDINIPUR DISTRICT

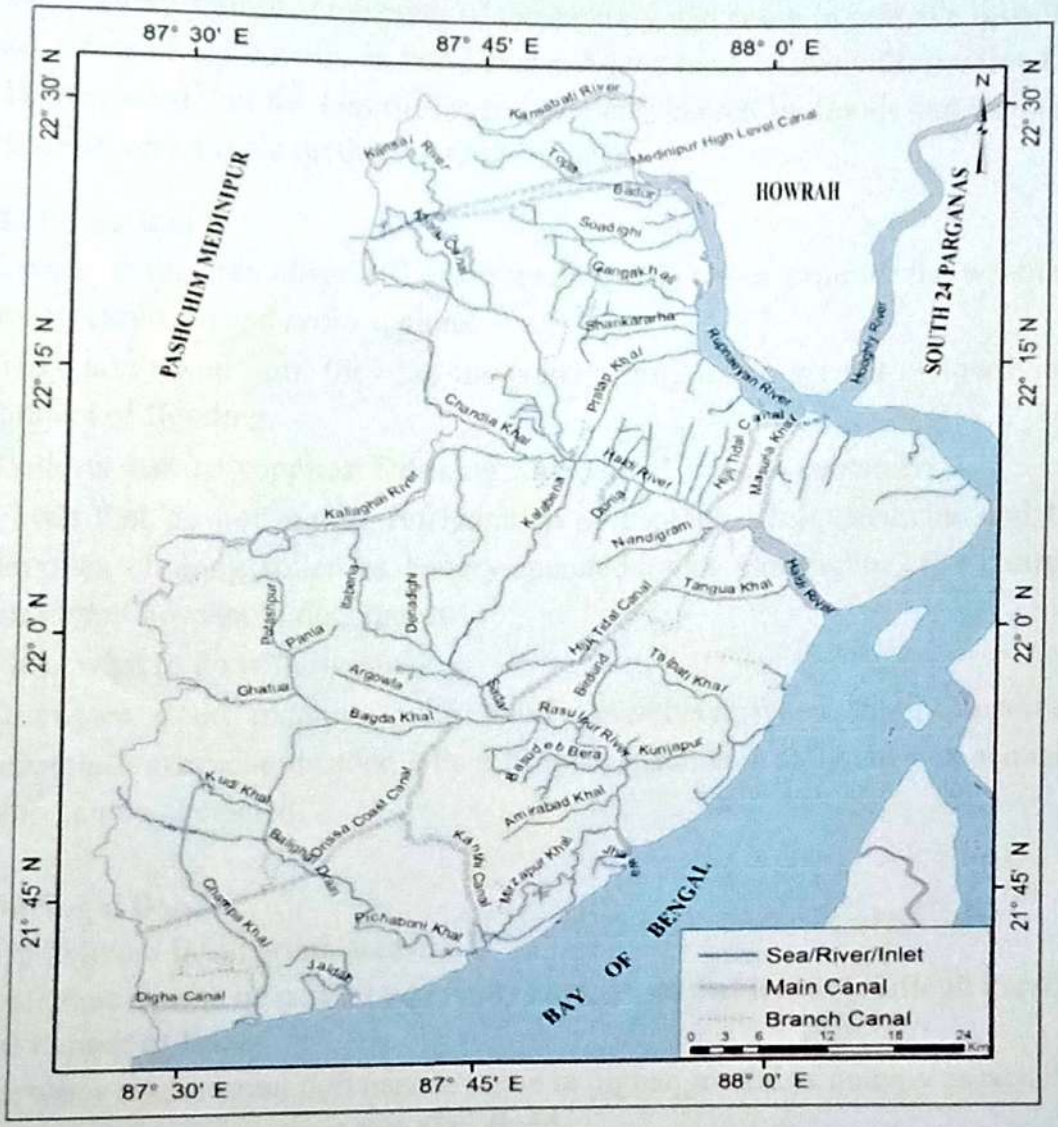

Plate No: 3 River System in Purba Medinipur district

3.1.2 Nature and occurrence of the flood:

Flood is a term used to denote an enormous amount of water. When there is an outflow of water in a place, it is said to be flooded. The situation caused when the water becomes uncontrollable is said to be flooded. The flood may take different forms such as in the form of heavy rainfall when there is a breaking of the dam. Furthermore, the melting of snow also leads to flooding. Floods lead to an overfull and huge spread of water but are not considered safe for the purpose of drinking. Thus floods bring with them a number of diseases such as typhoid, cholera and many others. The Purba Medinipur district suffers minor to major floods almost every year. In 1956, 1959, 1978, 1995, 2000, 2008, and 2021 floods submerged a large, low lying part of the district. In my study area is high flooded area in Patashpur-1, where there was last flood occur in 2021, which had an important impact on the people and nature of the village.

3.1.3 Usual coping procedure of the flood:

Floods occur every year in some areas of our country and result in massive loss of wealth and crops. Most of our country is flood prone. So we have to live with the flood. Floods cannot be prevented, but the loss of life and property caused by floods can be reduced by adopting some very simple methods and techniques.

❖ **Before a flood:**

- People in the area observe the surrounding conditions, monitor the weather radio, local television and radio stations.
- They don't wait until they see the water rising, try to get out of low-lying areas subject of flooding.
- Collects disaster supplies: Drinking water-filled in clean containers.
- Foods that do not require refrigeration or cooking, cash, medicine and first aid supplies, clothing, toiletries, battery operated radios, flashlights, extra batteries and important household documents.
- Plans what to do with livestock.
- Discusses flood planning with family members: when family members are separated, everyone decided where to meet again and designates an acquaintance who can be contacted.

❖ **During a flood:**

- Try to avoid flood prone areas.
- Everyone tries to be careful especially at night, so that it is not difficult to recognize the danger of flood.
- As water rises around it, it tries to move to higher ground as quickly as possible and get out of low-lying areas that may flood.
- Avoid areas that are already flooded.
- Stay away from power lines and electrical wires.

❖ **After a flood:**

- Wait until it is safe to return: Do not return to a flooded area until authorities say it is safe to do so.
- Follow the suggested route, try not to stay away from downed power lines.
- If a building is flooded, check for safety before entering: do not enter a building if it is still flooded or surrounded by flood water.

CHAPTER – IV

4.0 Data analysis and finding the result

4.1 Demographic Profile

Demography is the statistical study of populations, especially humans. Its examines and measures the aspects and dynamics of populations; it can cover entire societies or groups defined by criteria such as education, nationality, religion, and ethnicity. Educational institutions usually treat demography as a field of sociology, though there are a number of independent demography departments. These methods have primarily been developed to study human populations, but are extended to a variety of areas where researchers want to know how populations of social actors can change across time through processes of birth, death, and migration. In the context of human biological populations, demographic analysis uses administrative records to develop an independent estimate of the population.

As a rule, in the same country and at the same period, the size of an urban community is much larger than that of a rural community. In other words, urbanity and size of a community are positively correlated. Density of population in urban areas is greater. Urbanity and density are positively correlated. So far as urban community is concerned, greater importance is attached to the individual than to the family. Nuclear families are more popular in urban areas.

4.1.1 Gender composition:

Sex Composition of the human population is one of the basic demographic characteristics; as changes in sex composition largely reflect the underlying **socio-economic and cultural** patterns of society in different ways. According to the census field survey, in the study area has a total population of 216 (In 50 households) with 115 female per 101 adult male and with a sex ratio 1138 per thousand males.

Table No: 4.1.1 Gender Composition	
Total population	216
Male population	101
Male Ratio	46
Female population	115
Female ratio	54
Gender ratio	1138
Source: Field survey 2023	

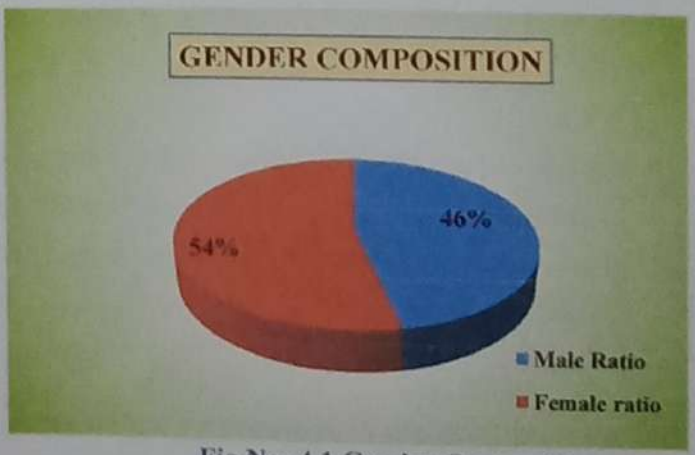

Fig No: 4.1 Gender Composition

4.1.2 Child sex ratio:

In India, the **child sex ratio** is defined as the number of females per thousand males in the age group 0–6 years in a human population. According to the field survey, in the study areas total child population is 12 and including male child population is 4 and female population is 8. So, the child sex ratio 2000.

Table No: 4.1.2 Child Population				
Child Population	Total child population	Male	Female	Child sex ratio
No Of Child Population	**12**	**4**	**8**	**2000**
Source: Field survey 2023				

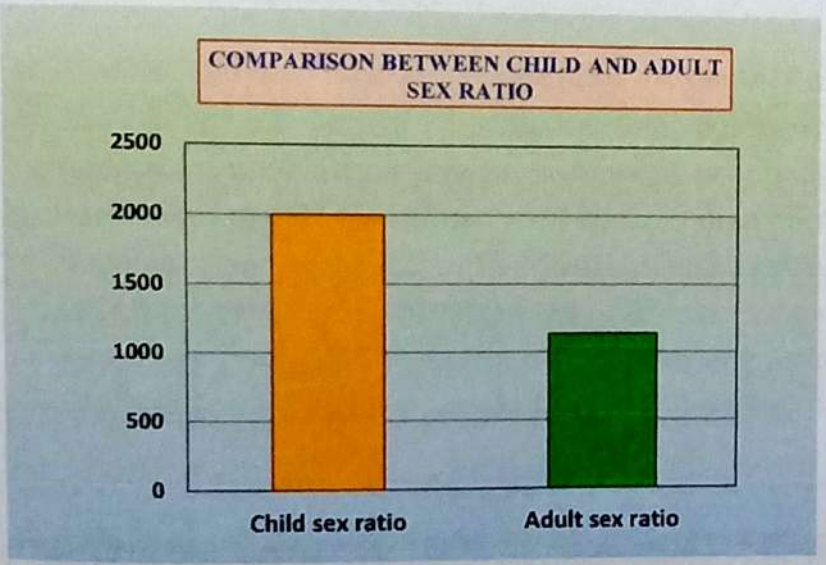

Fig No: 4.2 Comparison between child & adult sex ratio

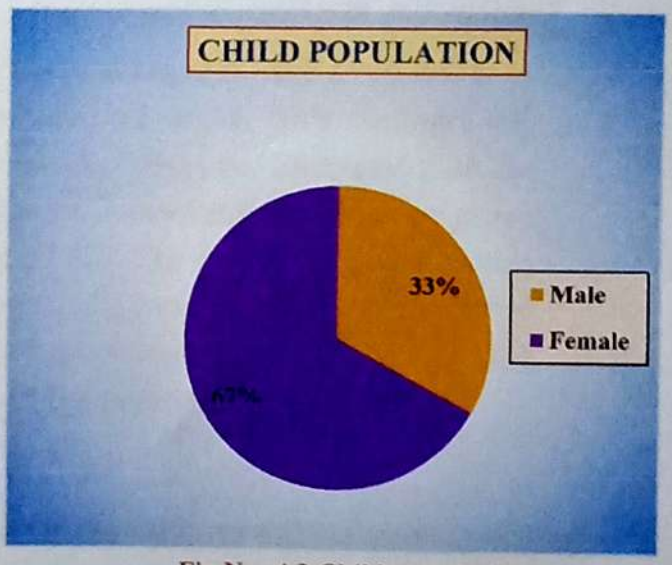

Fig No: 4.3 Child population

4.1.3 Age Composition:

In population studies, age distribution (also known as age composition) refers to the proportionate numbers of people in various age groups in a population. It is common in demography to split the population into three broad age groups: children and young adolescents (under 15 years old) the working-age population (15-59 years) and. the elderly population (60 years and older).

The household survey data on age, reveals that 68% of the population in the area is in the range of 15-59 years. 19% of the population in the area is in the range of 0-14 years. Least amount of population (13%) belongs to old groups i.e. above 59 years.

Table No: 4.1.3 Age-sex Composition				
Age Groups(yrs.)	Male		Female	
	Number	%	Number	%
0-14	13	13%	28	25%
15-59	71	70%	75	65%
>60	17	17%	12	10%
Source: Field survey 2023				

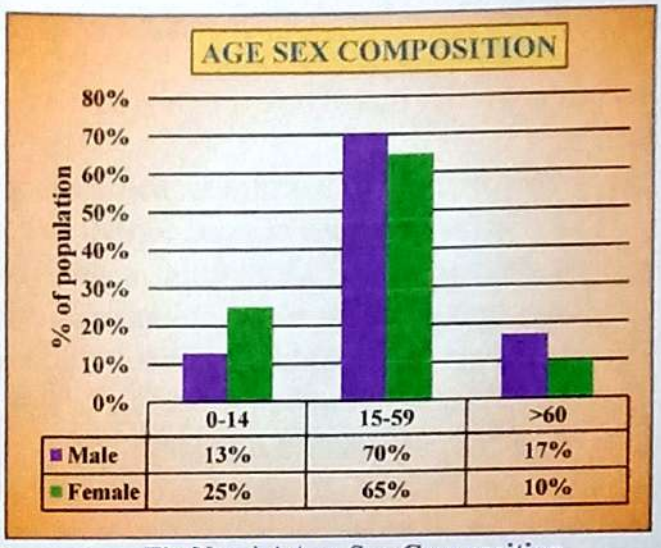

Fig No: 4.4 Age-Sex Composition

4.1.4 Dependency Ratio:

The dependency ratio is a measure of the number of dependents aged zero to 14 and over the age of 65, compared with the total population aged 15 to 64. This demographic indicator gives insight into the number of people of non-working age, compared with the number of those of working age. The maximum population concentrated middle age group or working age group, i.e., 15-59years.which is about 67.6%. The dependent population is about 32.41%, which is further classify into two groups i.e., young age group (19%) and older age group (13.43%). So, the dependency ratio of the study area is about 48%. That means 70 non-working population depend on 146 working population.

Table No: 4.1.4 Dependency Ratio				
Age Groups (Years)	No Of Population	Dependent Population	Independent Population	Dependency Ratio (%)
0-14	41	70	146	48%
15-59	146			
>59	29			
Source : Field survey 2023				

SOCIO-ECONOMIC STATUS

5.0 Socio-economic profile:

Socio Economic Status (**SES**) is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic access to resources and social position in relation to others. When analysing a family's SES, the household income, level of education, and pattern of occupation are examined, as well as combined income, whereas for an individual's SES only their own attributes are assessed. Socioeconomic status is classified into three levels (high, middle, and low) to describe the three places a family or an individual may fall into. When placing a family or individual into one of these categories, any or all of the three variables (income, education, and occupation) can be assessed.

Education in higher socioeconomic families is typically stressed as much more important, both within the household as well as the local community. In poorer areas, where food, shelter and safety are major priority, education is typically considered as less important.

Additionally, low income and education have been shown to be strong predictors of a range of physical and mental health problems, including respiratory viruses, arthritis, coronary disease, and schizophrenia. These problems may be due to environmental conditions in their workplace, or, in the case of disabilities or mental illnesses, may be the entire cause of that person's social predicament to begin with.

5.1 Literacy Status:

According to the field survey 2023, any person aged seven and above and has the ability to read and write is considered literate. According to the field survey the literacy rate in study area for male and female is 45.16% and 54.83% respectively. The total literate persons in study area were 124 out of which males were 56 and remaining 68 were female. The study area has a literacy gender gap of 9.67 percentage points.

Table No: 5.1 Literacy Status

Gender	Literate persons	Literacy rate (%)	Literacy gap(gender gap)
Male	56	45.16%	
Female	68	54.83%	9.67%

Source: Field survey 2023

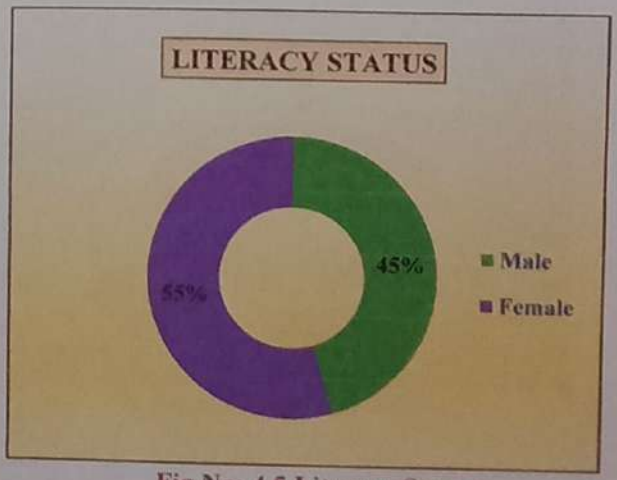

Fig No: 4.5 Literacy Status

5.2 Caste Composition:

Caste is a form of social stratification characterized by endogamy, hereditary transmission of a style of life. According to field survey overall population has been divided into the scheduled caste, scheduled tribes, OBC-A, OBC-B etc. It shows that majority of the population belongs to General category which is around 56%. SC & ST population is 30% and 10% respectively. The tiniest population group is OBC-B with only 4%.

Table No: 5.2 Caste Composition		
Categories	**No**	**(%)**
General	28	56%
SC	15	30%
ST	5	10%
OBC-B	2	4%
Source: Field survey2023		

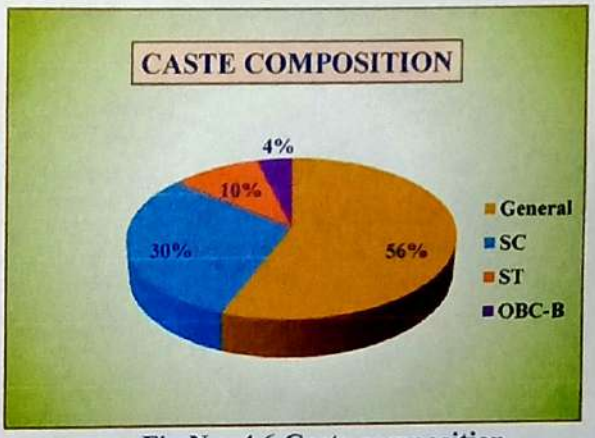

Fig No: 4.6 Caste composition

5.3 Poverty Status:

Poverty is a condition in which an individual or household lacks the financial resources to afford a basic minimum standard of living. According to field survey, out of the 50 household in the study area are 4% APL household and 96% BPL category belong in this area. According to the field survey 96% family belong in low level of poverty status, and there lifestyle also very low level.

Table No: 5.3 Poverty Status		
Poverty status	**Number**	**Percentage (%)**
APL	2	4%
BPL	48	96%
Source: Field survey 2023		

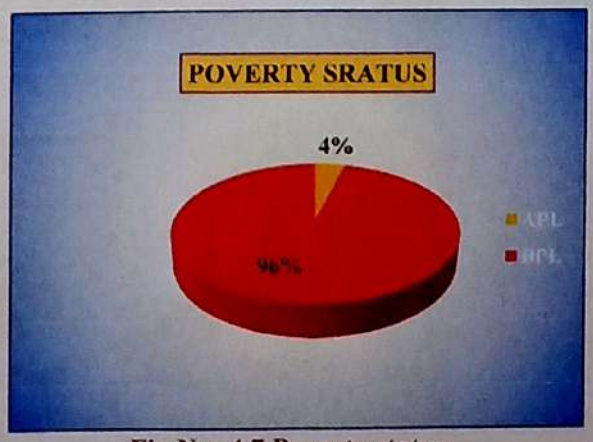

Fig No: 4.7 Poverty status

5.4 Level of Education:

According to the field survey, in study area held a primary education degree as their highest level of educational attainment compared with all other level of educational attainment. Specially 8.7% of adult in study area had a higher secondary degree, compare with 6.52% of adult who have bachelor's degree and 3.26% of adult had a higher education. And the percentage of illiterate persons of the study area is 29.34%.

Table No: 5.4 Level of education

Level of education	Number	Percentage (%)
Illiterate	54	29.34
Primary	65	35.32
Secondary	31	16.84
Higher secondary	16	8.7
Graduate	12	6.52
higher education	6	3.26

Source: Field survey 2023

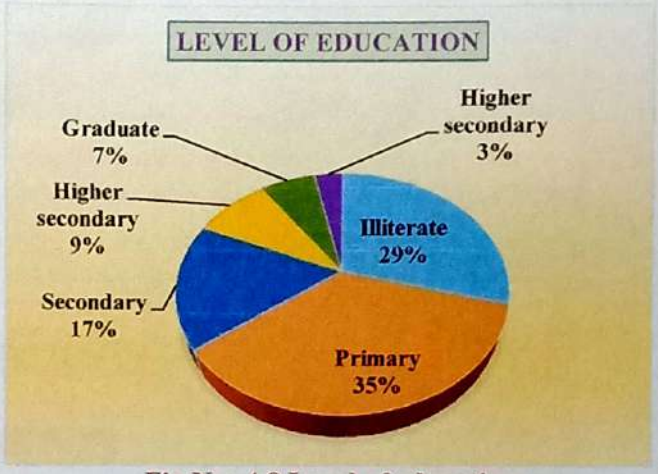

Fig No: 4.8 Level of education

5.5 Marital Status:

Marital status is the legally defined marital state. There are several types of marital status: single, married, widowed, divorced, separated and, in certain cases, registered partnership. According field survey most of the people is married (79%) followed by the unmarried people is 15%, widow people are 6%.

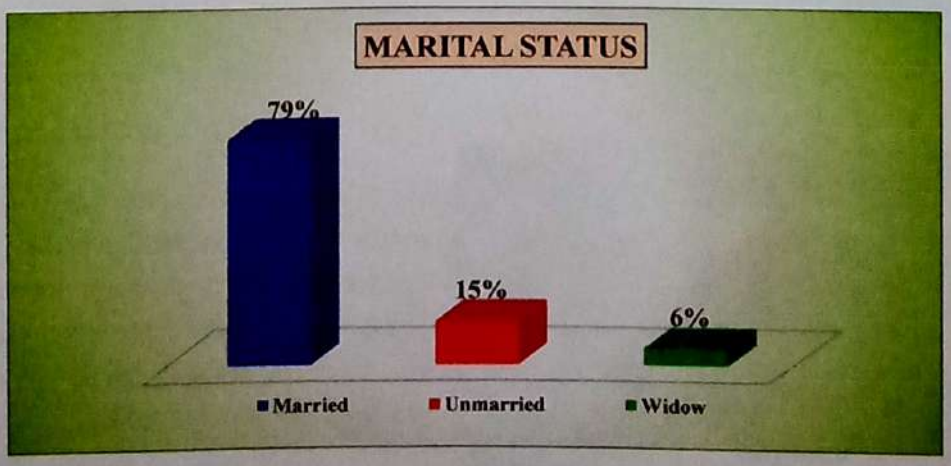

Fig No: 4.9 Marital Status

5.6 Occupation Pattern

The occupational structure of a nation refers to the percentage of its workforce employed in various economic ventures. The field survey in Nilapur also gives us data about the occupation. The shows that most of the people are engaged with agriculture (57%), some are engaged in Business (9%) and some are engaged in other sector like fishing, farming (6%) etc.

Table No: 5.6 Occupation Pattern		
Occupation Pattern	Number	Percentage (%)
Agriculture	45	57%
Business	7	9%
Other activities	27	34%
Source: Field survey 2023		

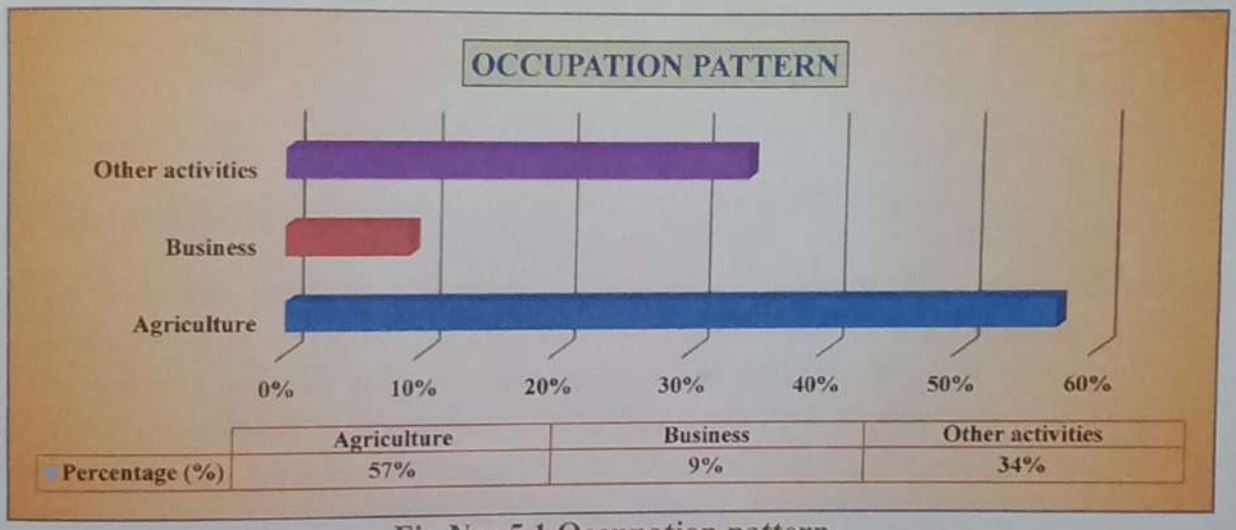

Fig No: 5.1 Occupation pattern

5.7 Nature of House:

According to field survey 68% household are kutcha, cause of their poverty status. These houses are made up of mud, bamboo, straw, wood etc. Pucca houses, including made up of bricks, concretes and are designed to last for long periods. The 32% of households are pucca.

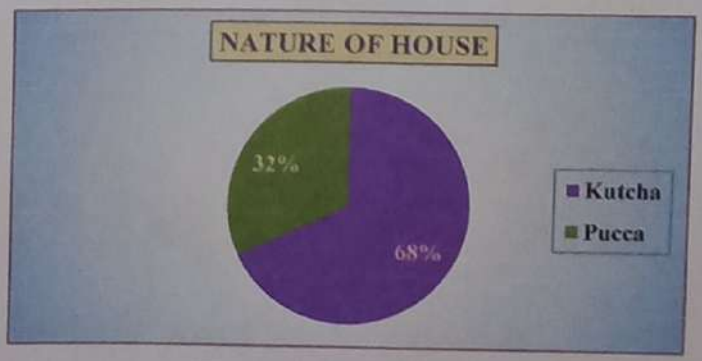

Fig No: 5.2 Nature of House

5.8 Monthly Family Income:

According to field survey, over 20 per cent overall 50 household have a standard of living 12% families have an income of less than Rs 5,000 per month i.e., Belong to the aspiring or lowest-income cohort. Also, the survey found that 68 per cent of households belongs to the middle class family.

Table No: 5.8 Monthly Family Income		
Monthly family income (in Rupees)	Number	Percentage (%)
<5000	6	12%
5000-10,000	34	68.00%
>10,000	10	20.00%
Source : Field Survey 2023		

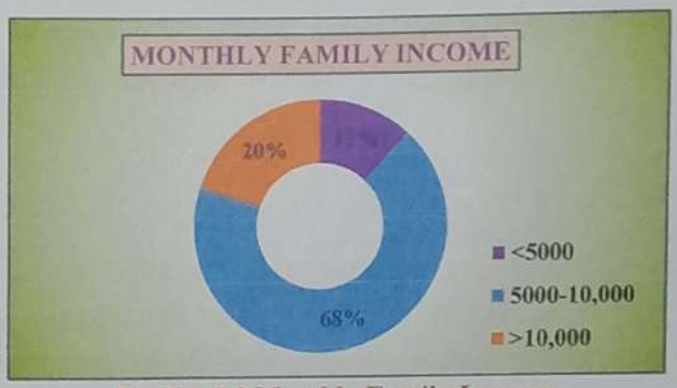

Fig No: 5.3 Monthly Family Income

5.9 Bank Account:

In the study area, here most of the peoples are involved agriculture, business or others trade work, and also present many students. Now days farmers are get many financial help also many students basically girls (like kanyashree, rupashree) from the govt. that's why bank account is very essential in our daily life so, they prefer bank account very muchly. So the percentage of bank account holders (89%) in Nilapur village but the bank account are dose not present (11%) people according to survey data.

Table No: 5.9 Bank Account		
Bank Account	Number	Percentage (%)
Yes	193	89%
No	23	11%
Source: Field survey 2023		

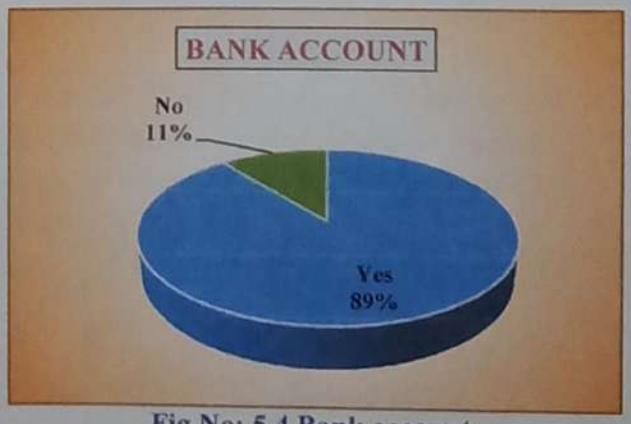

Fig No: 5.4 Bank account

ASSESSMENT OF AVAILABLE RURAL AMENITIES

6.0 Basic rural amenities:

A rural area, human settlement is comparatively low rather than urban area. Typically rural infrastructure in the area encompasses rural roads, rural housing rural water supply, rural electrification and rural telecommunication connectivity. My study area is a small size of population, low population density, lower cost of living, lower wages and more poverty etc. People pay to have access to rural amenities. For example, houses close to agriculture generally more valuable. School, shops are some of them amenities that make for a growing rural experience.

6.1 Source of Drinking Water:

Water a basic necessity of humans. Almost 24% and 46% household of the study area has access to safe drinking water. 24% and 18% of households have their own source of drinking water at home, on other hand 12% of households collect their drinking water from other source. The human broad of administration made tremendous water is pipe water which is about 23 household (46%). So, the study area successfully archived universal (100%) drinking water supply water supply to the households than the acuter water supply scheme.

Table No: 6.1 Source of Drinking Water	
Sources	**Household (%)**
Piped Water at home	**24%**
community water tap	**46%**
Hand pump	**18%**
Any other source	**12%**
Source: Field Survey 2023	

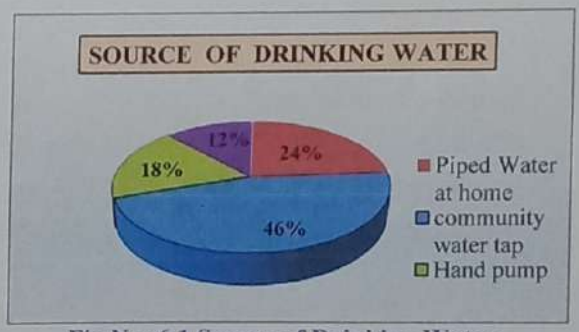

Fig No: 6.1 Source of Drinking Water

6.2 Electrification Status:

The municipality of the village to provide energy access to all by last mile connectivity and electricity connection to all remaining un-electrified households in study area to archived universal household electrification. In the study area all households (50) have electricity connection. So, the study area successfully achieved universal household electrification.

Table No: 6.2 Electrification Status	
Use of electricity	**Household (%)**
Yes	**100%**
No	**0%**
Source: Field Survey 2023	

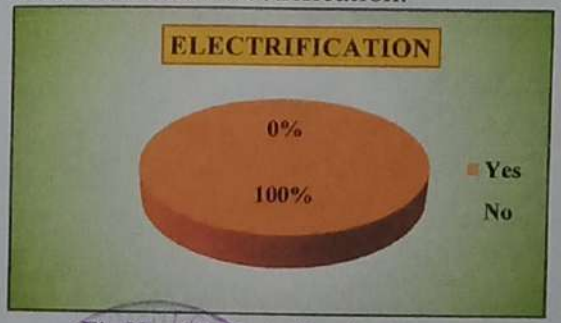

Fig No: 6.2 Electrification Status

6.3 Communication system:

Internet, telephone work, television etc. is going on Communication system. According to the field survey, communication system is very well in the study area. Communication system is good in maximum houses almost 80% households and it is excellent and poor status in the 6% and 14% respectively. Many peoples in the villages are living under the backward section, so their communication system is comparatively very low.

Table No: 6.3 Communication system		
Communication status	Number	Household (%)
Excellent	3	6%
Good	40	80%
Poor	7	14%
Source: Field Survey 2023		

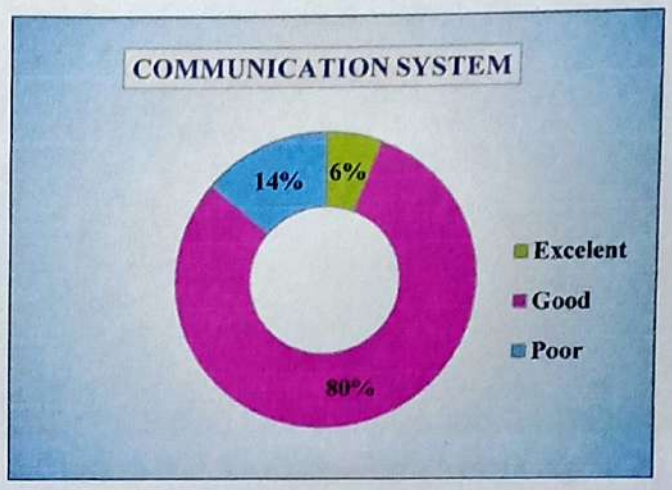

Fig No: 6.3 Communication system

6.4 Lifestyle status:

According to the field survey, the village cover almost poor family. The 54% of peoples belongs their lifestyle poorly, but 42% of peoples belongs to middle class family, and 4% of peoples spend their life richly, that number is very small. Most of the people in the village spend their lifestyle poorly because the occupation of most of the people here is agriculture.

Table No: 6.4 Lifestyle status	
Lifestyle status	Percentage (%)
Rich	4%
Middle class	42%
Poor	54%
Source: Field Survey 2023	

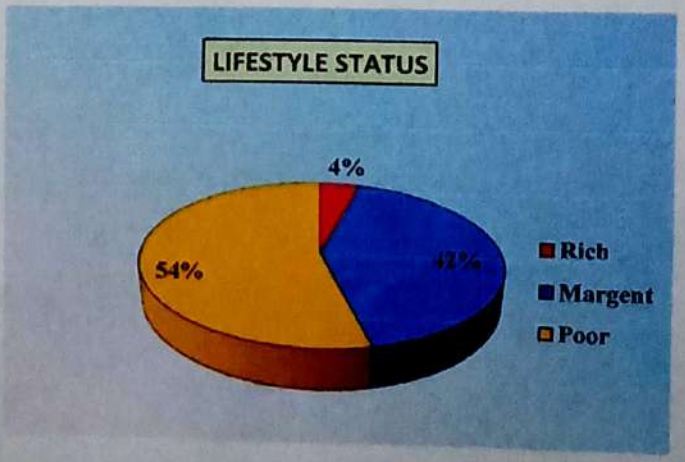

Fig No: 6.4 Lifestyle status

Plate No: 3.1 Drinking water facility

Plate No: 3.2 Community water tap

Plate No: 3.3 Hand pump

Plate No: 3.4 Electrification

7.0 EFFECT AND MANAGEMENT OF FLOOD

7.1 Information to relating to flood occurrence

Floods are the most frequent type of natural disaster and occure when an overflow of water submerges land that is usually dry. Floods are often caused by heavy rainfall, rapid snowmelt or a storm surge from a tropical cyclone or tsunami in coastal area. Floods are quite common in low-lying areas and areas that are near water bodies. Floods mostly happen when rivers overflow due to heavy or incessant rain. In my study area floods are often regular interval, the area is low lying comparatively another area. The flood destroy the people's livelihoods, their houses, land values etc. Flood inundated status, causes of flood, intensity of flood etc. going under the relating to flood occurrence.

7.1.1 Flood occur status:

Last flood occur status is a measurable component effects of flood in a livelihood. In my study area (Nilapur village of Patashpur I block of Purba Medinipur) 100% peoples are respond that last flood occurred in 2021. This flood destroy many housed and livelihood of the village.

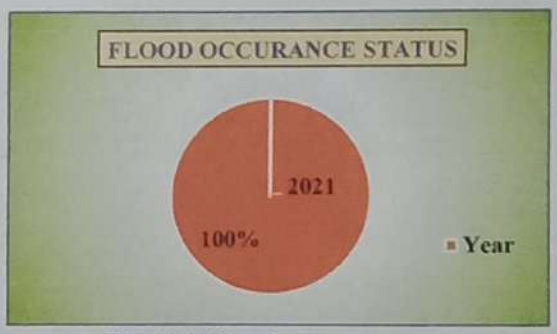

Fig: 7.1 Flood occur status

7.1.2 Village inundated status:

Longtime inundated status is a measures unit of effects of flood. According to field survey total 29 (out of 50) households (58%) response that some area of the village is inundated for 5-10 days, and 21 households (42%) response that inundated time is above 10 days. By this it is understood that the village has a low laying area.

Table No: 7.1.2 Village inundated status

Days	Percentage (%)
2-3 days	0%
5-10 days	58%
>10 days	42%

Source: Field Survey 2023

Fig: 7.2 Village inundated status

7.1.3 Cause of flood occur:

The cause of flood occurrence is depend on many reasons which are Flow long rainfall, Sudden hazard any heavy rainfall, and release of water from other parts. According to the field survey in the study area the flood is occur mainly due to the flow long rainfall which is 84% and sudden hazard and heavy rainfall which is 16% respectively.

Table No: 7.1.3 Cause of flood occurrence

Cause	Percentage (%)
Flow long rainfall	84%
Sudden hazard and heavy rainfall	16%
Release of water from other parts	0%

Source: Field Survey 2023

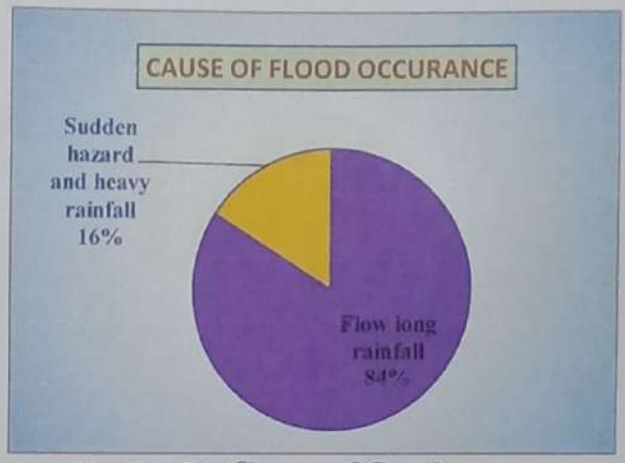

Fig No: 7.3 Cause of flood occur

7.1.4 Flood inundated time:

Flood inundated times is a measures unit of effect of flood. According to the field survey floods are rare in some areas of the village which are relatively low-lying compared to other areas which is 14% for the flood inundated time but most of the peoples (86%) respond to Regular interval respectively.

Table No: 7.1.4 Flood inundated time

Type	Number	Percentage (%)
Frequently	0	0%
Rarely	7	14%
Rectangular interval	43	86%

Source: Field Survey 2023

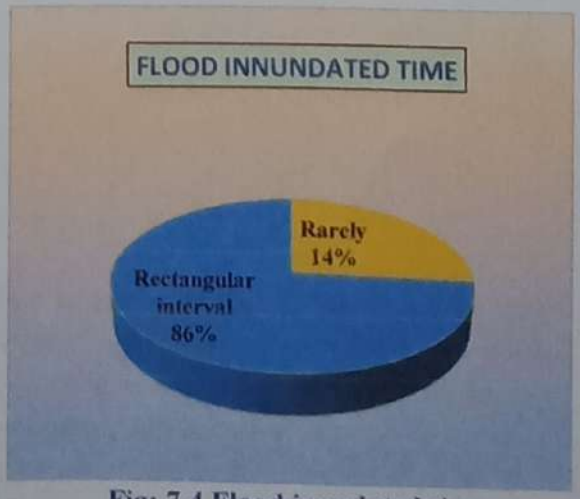

Fig: 7.4 Flood inundated time

7.1.5 Intensity of flood:

Effect of flood depends on intensity of flood. When the intensity of flood are more than the effects of flood is increased. According to the field survey 41(82%) households are respond to the intensity of flood is more, which is destroy the livelihood like land quality, agriculture, houses, vegetation, food etc.

Table No: 7.1.5 Intensity of flood	
Intensity	Percentage (%)
More	82%
Less	18%
Source: Field survey 2023	

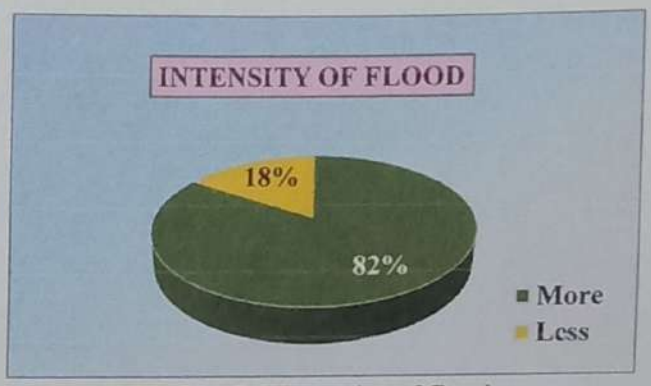

Fig No: 7.5 Intensity of flood

8.0 EFFECT BY FLOOD:

According to the field survey, peoples are effect by flood severely 46% and 54% peoples are effect due to flood. The village is highly flood prone area. Many peoples are loss their houses, agriculture, agricultural land etc.

Table No: 8.0 Effect by flood	
Type	Percentage (%)
Severely	46%
Slowly	54%
Source: Field survey 2023	

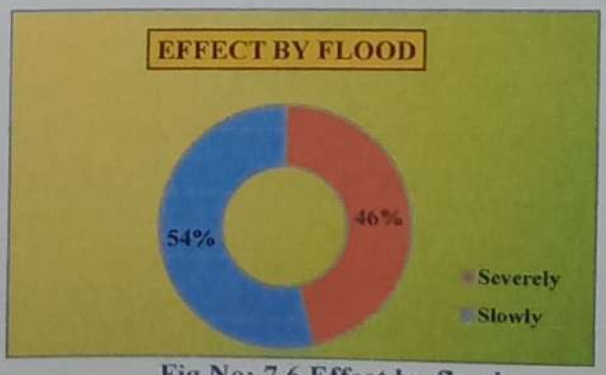

Fig No: 7.6 Effect by flood

8.1 Maximum loss of livelihood:

Natural disasters directly affect crop production and farmers livelihood. Maximum people in the study area belongs their livelihood to agriculture. According to the field survey 86% of the peoples are maximum loss their agriculture, 10% of peoples loss their liver status and 4% of peoples in the study are damage their infrastructure due to flood.

Table No: 8.1 Maximum loss of livelihood		
Type	Number	Percentage (%)
Agriculture	43	86%
Lives	5	10%
Infrastructure	2	4%
Source: Field survey 2023		

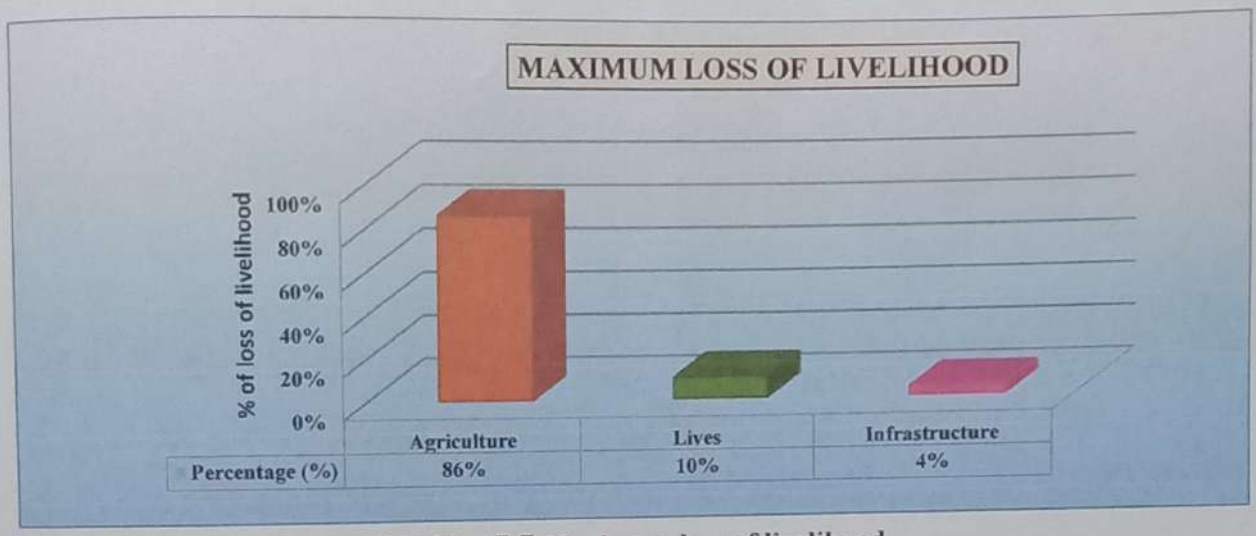

Fig No: 7.7 Maximum loss of livelihood

8.2 Loss of health status:

Flooding creates stagnant water, which becomes a breeding ground for cholera, dehydration etc. diseases. According to the field survey most of the peoples are loss their health due to dehydration and other disease, which is 64%, and 6% peoples are suffering for cholera disease problem but 20% of peoples are not suffering any disease.

Table No: 8.2 Loss of health status		
Health status	Number	Percentage (%)
Cholera	3	6%
Dehydration and other disease	32	64%
No disease	15	30%
Source: Field survey 2023		

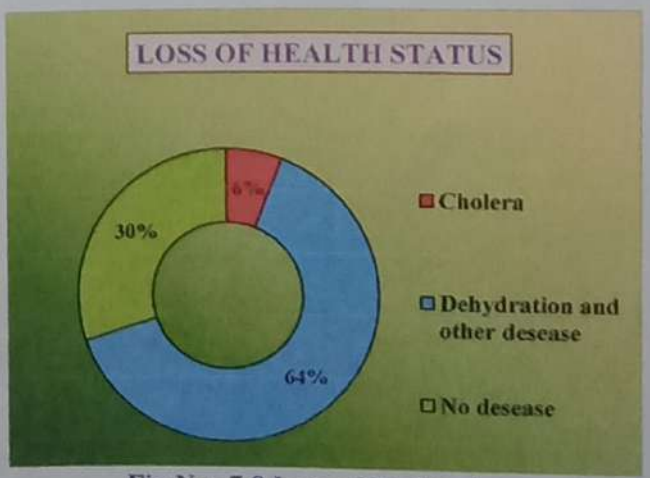

Fig No: 7.8 Loss of health status

8.3 Fresh shortage of food:

A shortage of food may happen when not enough food is produced. According to the field survey 86% people face problem of collect fresh food due to flood. On the other hand 14% of peoples did not face any problem in collect fresh food.

Table No: 8.3 Fresh shortage of food

Yes	No
86%	14%

Source: Field survey 2023

Fig No: 7.9 Fresh shortage of food

8.4 Damage of house:

Flood cause permanent sruructure damage to property and homes. Flood water enter many peoples homes and damage their house severely which is 34% households and 66% of houses are damage their house slowly.

Table No: 8.4 Severely damage of house

Type	Number	Percentage
Yes	17	34%
No	33	66%

Source: Field survey 2023

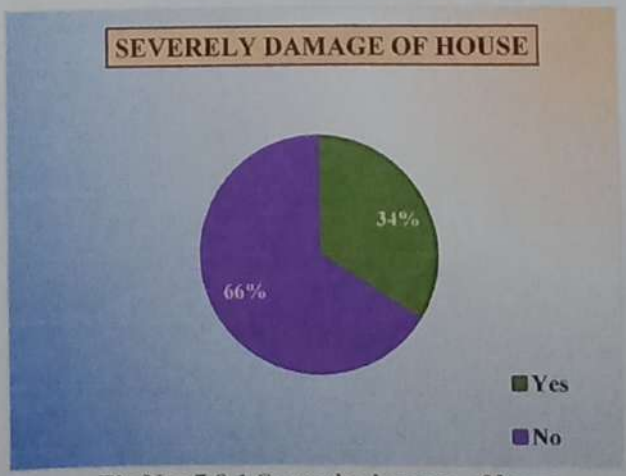

Fig No: 7.9.1 Severely damage of house

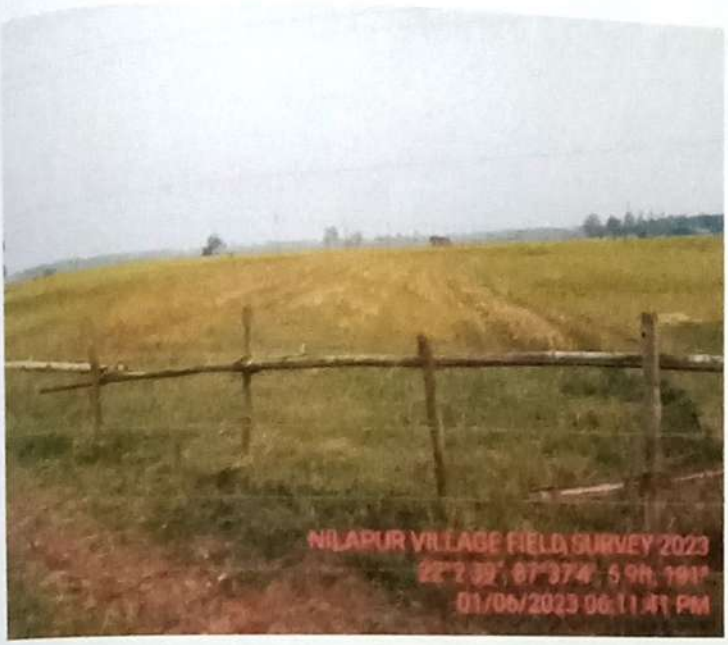

Plate No: 3.5 Agricultural land

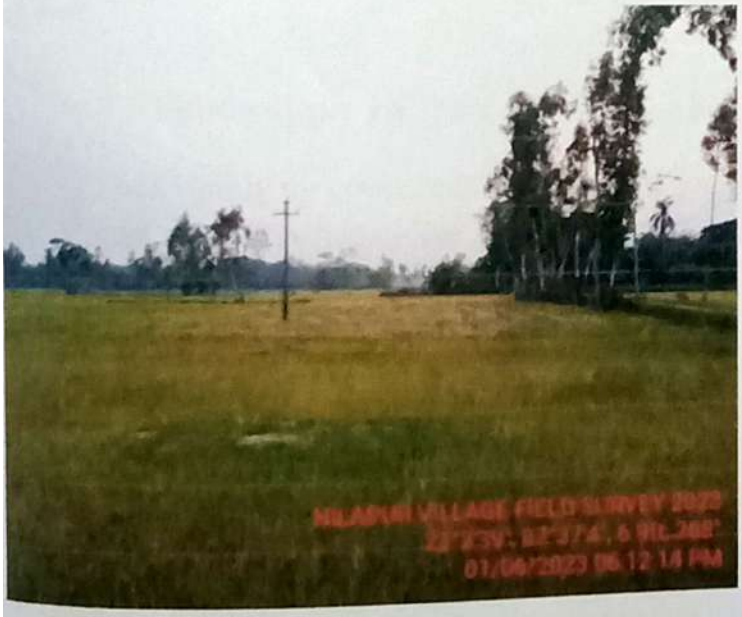

Plate No: 3.6 Village without flood

Plate No: 3.7 Village during flood

Plate No: 3.8 Damage of houses

Plate No: 3.9 Loss of agriculture

MANAGEMENT OF FLOOD OR CONTROL OF FLOOD

9.0 Introduction:

Flood management planning is a very important aspect of disaster management which helps to rescue the flood affected people, to mitigate the problem of flood and to take necessary preventive measures. Flood is disaster that plays a significant role in the life of common people. During the flood season, people suffer from hunger, they suffer from various disease, farmers land and agriculture are damaged, houses damaged etc. My study area is flood prone and the people of the village face various problems due to flood there so various facilities or reliefs are providing by the government during flood or post flood like- food supply, flood relief, medicine facilities etc. Which are very beneficial to flood affected people.

9.1 Food supply by govt. to the people:

Food supply by government to people is a post flood management Programme. In the study area total 84% people are get food by govt. after flood and 14% of people are not get food by government.

Table No: 9.1 Food supply by government

Features	Percentage (%)
Yes	86%
No	14%

Source: Field survey 2023

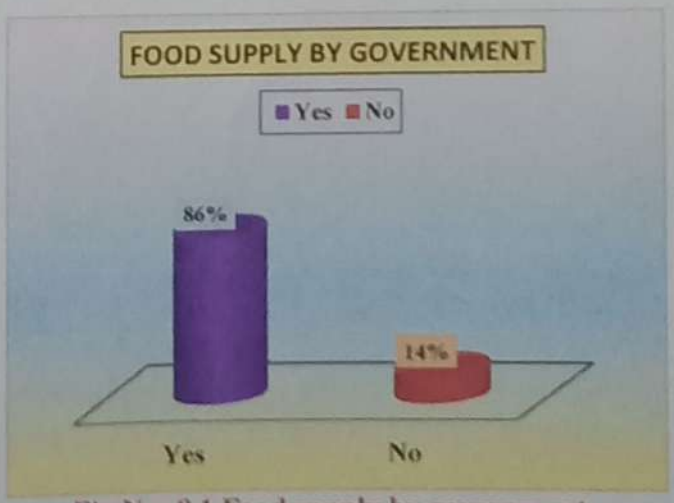

Fig No: 8.1 Food supply by government

9.2 Other kind of flood relief to people:

Other kind of flood relief means cloths, tents, canvas, mosquito netting, soap, drinking water etc. In my study area 72% peoples are get flood relief from government and 28% people are not get flood relief from government.

Table No: 9.2 Other kind of flood relief program		
Features	Number	Percentage (%)
Yes	36	72%
No	14	28%
Source: Field survey 2023		

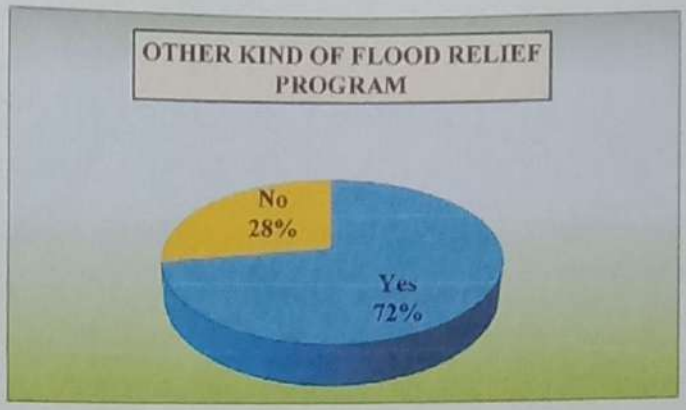

Fig No: 8.2 other kind of flood relief program

9.3 Medicine and health services by government:

It is also post flood management process. After flood occurrence in an area government give them medicine and other health services. In my study area 66% peoples get medicine and health services from govt. and 34% peoples are not this facility.

Table No: 9.3 Medicine and health services by govt.	
Features	Percentage (%)
Yes	66%
No	34%
Source: Field survey 2023	

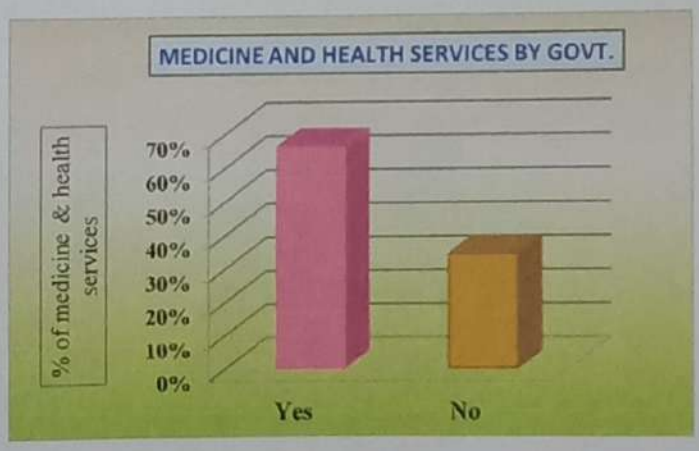

Fig No: 8.3 Medicine and health services by govt.

9.4 Awareness of people:

In a flood prone area government takes a program to aware about effect of flood to the peoples of flood prone area. In the study area 58% peoples get this facilities but 42% peoples are not get this facilities.

Table No: 9.4 Awareness of people	
Features	Percentage (%)
Yes	42%
No	58%
Source: Field survey 2023	

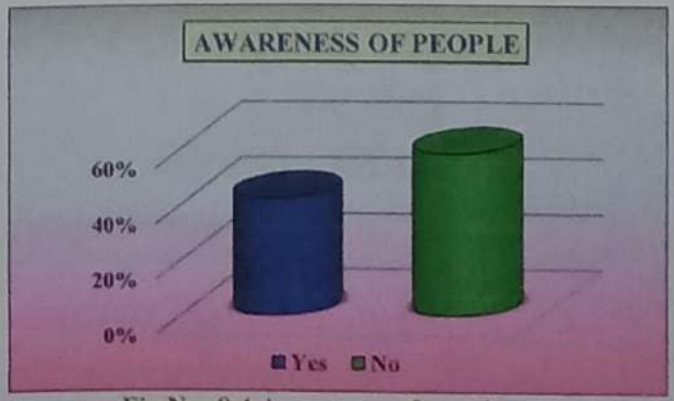

Fig No: 8.4 Awareness of people

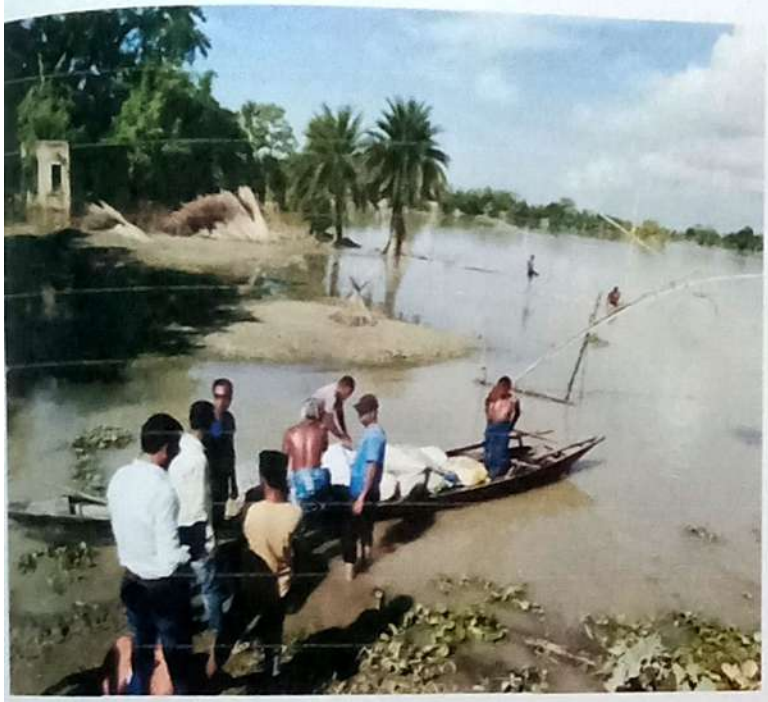

Plate No: 4.1 Food supply

Plate No:4.2 other kind of flood relief by govt.

Plate No: 4.3 Medicine and health services by government

9.5 Loan or financial assistance:

In this program peoples get loan or financial assistance for land compensation. In my study area 30% people are get financial assistance and 70% people are not get loan or financial assistance.

Table No: 9.5 Loan or financial assistance		
Features	Number	Percentage (%)
Yes	15	30%
No	35	70%
Source: Field survey 2023		

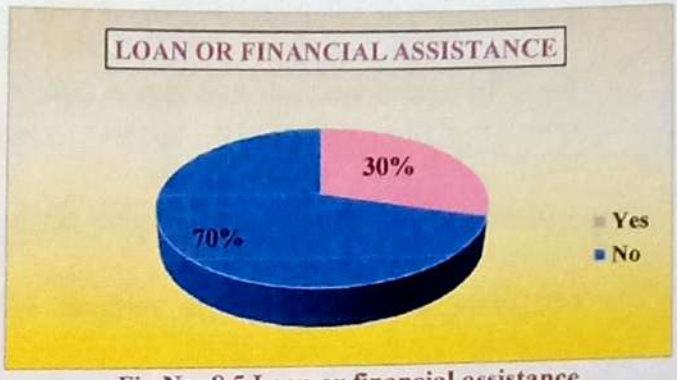

Fig No: 8.5 Loan or financial assistance

9.6 Flood relief program by NGO's:

Usually, NGO's working with disaster management usually cater to other purposes as well such as dealing with the underprivileged, education, healthcare, elderly assistance, nutrition, environment protection, sanitation, food security, shelter, infrastructure, livelihoods etc. According to the field survey, the area did not receive help from any NGO'S.

Table No: 9.6 Flood relief program by NGO's	
Features	Percentage (%)
Yes	0%
No	100%
Source: Field survey 2023	

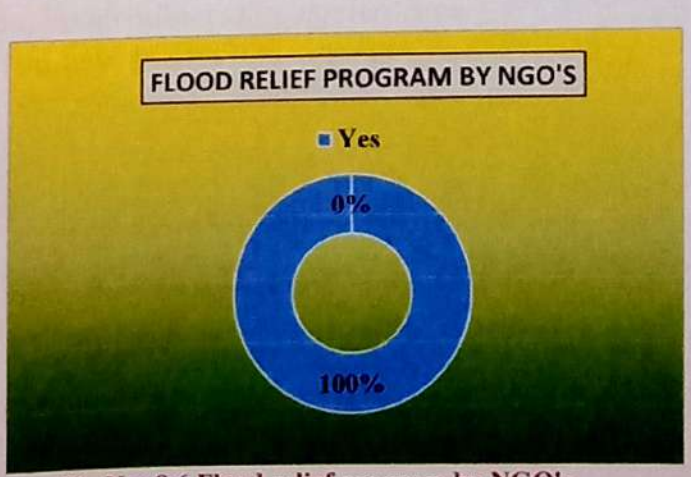

Fig No: 8.6 Flood relief program by NGO's

CHAPTER – V

10.0 Major Findings:

- According to the field survey, sex ratio is 1138 per 1000 males.
- According to the field survey age composition revels that the percentage of adult population is high **(68%)** and least amount of population belongs to old age group **(13%).**
- The survey data also indicate that most of the people are educated up to **primary (35.32).**
- While analysing the marital status **79%** peoples are **married** and **15%** are **unmarried.**
- Poverty status are also very high in this area because **96%** household are **BPL** card holder and remaining **4%** is **APL** holder.
- Most of the people in the study area are engaged in **agricultural sector (57%),** their monthly family income is around 5000-1000.
- Most of the peoples collect drinking water from **communication tap (46%).**
- Every household has electrification system, and communication status is good of the residence.
- The survey data indicate 54% peoples are spend their life poorly.
- In the study area last flood occur in the year of **2021.**
- According to the field survey the village remains inundated almost **10-12** days & flood occur for long time rainfall.
- In the study area is highly flood prone area where intensity of flood is more **(82%).**
- The survey data indicate that most of peoples are affected by **agriculture.**
- As per survey data Government help them with **food, cloths** etc. to flood effected people.

11.0 Problems:

According to the field survey I noticed various problems related to flooding in that area. For example, natural calamities like floods have caused various problems to the ecosystem, environment, and people of that area.

❖ **Natural environmental problem:**

✓ Floods have polluted water.
✓ Floods have disputes the balance of the environment.
✓ River embankment is broken.

❖ **Problem on ecosystem:**

✓ Small trees, vegetables, crops have been severely damaged due to strong flood currents.
✓ Rapid flow of water has damaged the soil and deposited silt elsewhere.

❖ **Humans problems:**

✓ Due to the impact of floods, there has been a huge loss of agricultural activity.
✓ Waterborne disease have cause loss of human life, loss of property.
✓ Damage of livestock and deterioration of health due to flood.
✓ Also damages homes, businesses, transport network.
✓ Health effects seen during and after floods include injuries, infections, poisoning and wider mental-health.

12.0 Suggestions:

For the socioeconomic development of Nilapur village in Patashpur-1 block many problems have been created and also pollute the natural environment. In this situation, the suggestions for future betterment are given below:

➢ Construction of Dams and reservoirs.
➢ Redirecting the excess water to canals and flood ways.
➢ Making people aware of floods by government.
➢ Move to a safe place during a flood.
➢ Store food the greatest crisis in a flood situation is flood.
➢ Prove clean water by local govt.
➢ Special attention should be paid to children because children are more infected during this time.
➢ Taking a various steps related to flood by the government.
➢ Increase the amount of relief for flood affected people.
➢ Using various insecticides to control insect infestation.

13.0 Limitations of the study: The present study has some shortcomings, like-

- Whole study is based on limited primary data.
- The lack of sufficient data.
- This is a very short time study.
- Lack of detailed study on this study previously.

CONCLUSION

Managing flood in any tropical and developing country is difficult for any single agency/organization. Flood has a multidisciplinary dimension where society plays a vital role. With limitation in prediction of rainfall, flood forecasting also cannot be very accurate. If local people can be improve and their knowledge is used for devising a disaster management plan where all available scientific data are also taken as input then surely some of the indeterminate factors of disaster management can be overcome.

Month wise total rainfalls in different years are prepared to show the trend of rainfall and also used for flood modeling. Land use land cover map shows the flood affected zone in Patashpur –I block. It is also observed that the different inundation after using D.E.M of 5mt, 6mt & 7mt. Flood modelling shows that Amarshi – 1 & 2, Brajalalpur, Chistipur – 1 & 2, Gokulpur, Gopalpur are highly flood affected whereas Naipur, Barhat are moderately affected. It is also observed that the evacuation route of the flood affected people & rescue map for the shelter at the time of flood after modeling the flood.

The co-operation of regional people with the state Govt. is the most important factor which will help the flood affected people to have stability in the post flood-situation. The study will help the local people to have some preliminary ideas by which they will be able to save themselves from the ire of flood. If Geoinformatics are used to great extent for various floodplain management activities such as, base mapping, topographic mapping & post disaster verification of mapped flood plain extents & depths, it will give a great prospect for the mitigation of flood.

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