# IMPLICATION OF FLOOD ON THE HEALTH OF WOMEN: A STUDY IN THREE VILLAGES OF BARPETA DISTRICT, ASSAM

Thesis submitted to Jawaharlal Nehru University for the award of the degree of

#### DOCTOR OF PHILOSOPHY

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2016



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Date: 21/4/2016

#### **DECLARATION**

This is to certify that the thesis entitled "Implication of Flood on the Health of Women: A Study in three Villages of Barpeta District, Assam" is submitted for the award of Degree of Doctor of Philosophy of this University. This thesis has not been submitted for any other degree of this University or any other University and is my original work.

Panchi Pathak

We recommend that the thesis b placed before the examiners for evaluation and consideration of the award of Degree of Doctor of Philosophy.

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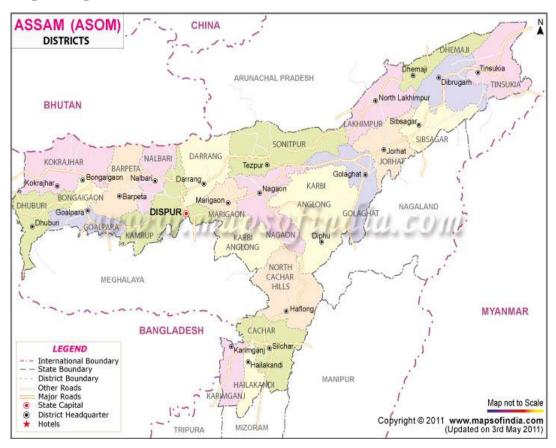
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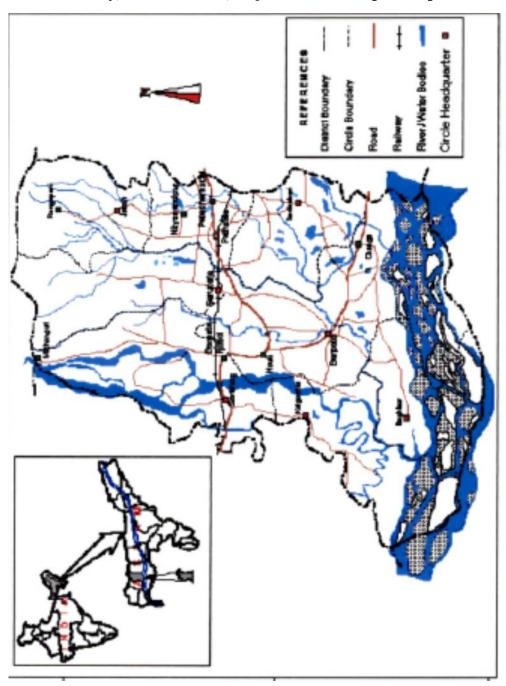
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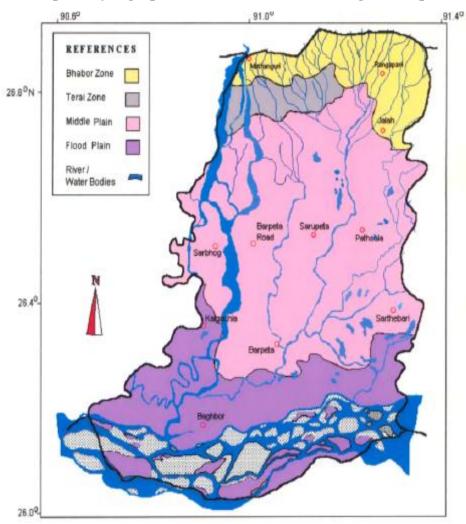


Source: www.mapsofindia.com

Map 1. Location Map of Barpeta district (district boundary, sub-division and circle boundary, roads and rails, major rivers and important places).



Source: (Talukdar, 2005)



Map 2. Physiographic Sub-divisions and Drainage of Barpeta district

Source: (Talukdar, 2005)

#### **CHAPTER ONE**

#### Contextualizing Flood and Vulnerability

#### 1.1 Introduction:

When rivers overflow their banks they cause damage to lives, property, infrastructure and crops. Floods are common and mostly thought as 'natural' disasters. Naturalness is contested in the disaster literature as it is the man made infrastructure and development on the flood plains which causes disasters. Floods have been part of life from the time immemorial. When it comes to the definition of flood, there have been numerous definitions of this phenomenon by different scholars. As per Webster's New World Dictionary it is 'an overflowing of water on an area normally dry'. The World Meteorological Organization defines flood as '(1) Rise, usually brief, in the water level in a stream to peak from which the water recedes at a slower rate. (2) Relatively high flow as measured by stage height or discharge. (3) Raising tide' (WMO, 1992). Typically all these definitions, irrespective of individual or collective, have always put more emphasis on the hydrological and meteorological aspects of the phenomenon without giving any mention to the societal impacts (Pielke, 2000:134).

#### 1.2 Impacts of flood:

The impacts of floods are difficult to trace because of their multi order effects on society and economy. A flood can devastate homes, commercial buildings, agricultural and pastoral lands, public goods and other physical properties. Floods have huge impact on the loss of livelihoods, especially agriculture and livestock. Since the topic of this thesis is implications of floods on health, will explore more on the health and sanitation issues.

During the flood and its aftermath, there are also threats to one's health and safety. In the floods which occurred in Bangladesh in 1988, diarrhea was found to be most common illness and a major cause of death amongst the population affected by the flood (Siddique, et. al. 1991). Respiratory infections induced by the floods were also blamed for the high morbidity and death toll -46,740 patients and 154 deaths in the

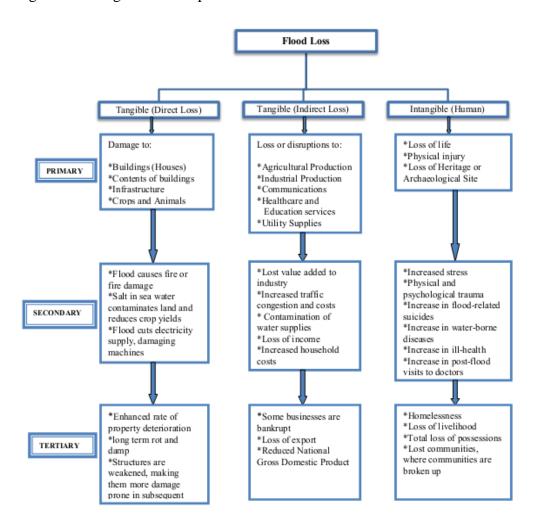
devastated areas. In developing regions of the world, acute sanitation problems and various water-borne diseases – such as diarrhea, dysentery, cholera and typhoid – threaten disaster affected populations, especially the poor and vulnerable, due to lack of access to safe drinking water, medicine and hygienic food (Naoki Minamiguchin, nd.). According to the report of Disaster Management Division of the Ministry of Home Affairs, in year 2008 incessant rains and flash floods have engulfed 1736 human lives, affected a population of 17,9,95,540, estimated livestock loss is 17,521 and demolished/damaged 4,48,409 houses in 12065 villages of 110 districts across India (Indian Red Cross Society, 2008). The sheer volume of damages to lives, infrastructure, livelihoods and health make this topic worth pursuing for research. Further there are no systematic empirical studies done on implications of recurrent floods on human health especially from gender perspective in India.

In any circumstances, floods have significant impacts on society and these are complex in nature, therefore, difficult to attribute solely to it (Roy, 1999). The impacts are difficult to trace because of their multi-order effects. For a better understanding of flood damages, they are usually categorized into tangible and intangible, direct and indirect, and primary, secondary and tertiary ones (Penning-Rowsell & Chatterton, 1997). Tangible damages are generally those which can be measured in monetary terms such as damage to the property, although such measurement is hardly ever precise and relies heavily on damage estimation procedures. Tangible losses can be large, for instance the flash floods of 2008 have damaged approximately 4, 48,409 houses as mentioned earlier in 12065 villages across the country (Indian Red Cross Society, Report on India flood, 2008). The floods of Bangladesh in 1987 and 1988 also caused massive damage to the households and properties. It was estimated that approximately 2.5 million and 7.2 million households were damaged during the flood (BWDB, 1987 & MOI, 1988). Again primary impacts are the 'first round' one-that shows the immediate effects. These impacts lead to further ones, which are termed as secondary losses. At times the secondary losses may also be very large, as in the 1974 river flood in Bangladesh following which several hundred thousand people died because of flood-related famine (Islam, 1997).

Again much of the impact of flooding cannot be measured through monetary terms. Such impacts are basically intangible in nature. Intangible impacts include loss of life, fear of recurring severe flood events and other physical and psychological effect on the flood effected people. Psychological impacts on the flood effected people are always severe than any other health effects. Psychological problems continue to have an impact on the people even after the flood recedes and in many situations it becomes a life long illness for these natural disaster affected people. However, it is difficult to assess intangible impacts, as there can be various reasons for people's vulnerability and their ability to cope with such situations. However, an understanding of the intangible impacts is also important in the study to assess the different development programmes, which are available in the study area.

#### 1.3 Flood losses:

Figure 1.1: Diagrammatic representation of the flood losses.



Source: Parker, 2000: 32

There is interesting information, which reflects the concentration of death cases and economic losses as a result of different types of disasters. 97 percent of all deaths caused by disasters occur among 67 percent of the world's population who live in poorer regions, but 75 percent economic loss appears to occur in the wealthy regions (Burton et. al, 1993), Bradford and Carmichael, R.S, 2001). So undoubtedly it's the poorer nations who bear the brunt of flood disasters more. This becomes obvious in figure 1.2 showing percentage of death cases across the continents between the years 1987 and 1996.

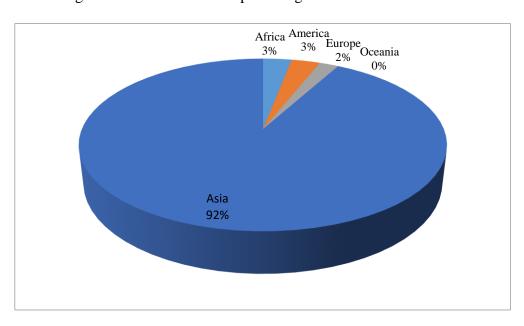


Figure 1.2: Continent wise percentage of deaths due to floods

Source: Parker D.J. (2000), Floods, p.07

92 percent of death burden of the total is carried by Asian continent; India is the second biggest contributor to these deaths after Bangladesh in Asia. This reflects the gravity of the situation of flood and losses of lives and livelihood. However, this data reflect the deaths during the flood situation and does not give the details after flood situation. There is a huge gap in understaning the long term impact of disasters and the rehabilitation process in Indian context (Reddy 2013). The situation after flood where there is no potable drinking water, where there is limited access to food and a situation favourable for outbreak of various communicable and vector borne diseases continues to kill people in the form of diseases.

#### 1.4 Public health aspects of flood:

It is a known fact that disaster like flood not only causes physical and human hazards but it also has serious repercussions on the social, political, economic and cultural life of the affected areas. Especially in the rural areas the impact is greater as it is evident from the existing literature and from the data collected for the thesis that the level of vulnerability or capacity of the flood victims to cope up and resettle again is very thin compared to urban areas. Moreover if the majority of the population of the flood-affected areas belongs to the minority groups the scope of rehabilitation becomes considerably faint. Hence disaster like flood not only reveals the prevalence of existing inequities in context to access of the basic resources like food, clothes and shelter but also causes major hurdle in accessing health care services and assistance from the public health department when the situation experiences dire need of their services. The role of public health is vital in any disaster-affected areas including flood. As floodwater carries micro-organisms and other harmful pollutants it contaminates the drinking water sources.

It is essential to keep in mind that the condition of poor environmental sanitation and unsafe drinking water is one of the major determinants of health in India. There is disturbing fact, which shows that water borne infectious diseases constitute nearly 60-80% of the illnesses in the country. A review from the different government plans and programmes reflects that the problem of sanitation has been given the least priority in the five year plans and as a result of which most rural and urban areas in the country lack proper facilities for waste water and excreta disposal and solid waste management facilities. Especially in rural areas, subsidy driven sanitation efforts have had a limited coverage due to some serious physical limitations, problems in adopting and using toilets, and corruption in toilet construction with subsidy. Nevertheless the services which have been provided till now, have also deteriorated over the years due to neglect and the gap between the needs of the people for these services and the resources of the local bodies and also the different environmental issues caused by natural calamities including flood have a role in deteriorating these resources.

In India in so called normal circumstances itself, diarrhoea constitutes to the cause of one fifth of the total deaths of children below five years of age. Nearly 535,000 children die because of diarrhoea every year (Boschi-Pinto, 2008). Eventually constant recurring

of diarrhoea and intestinal worm diseases have resulted in the prevalence of severe malnutrition of children (NFHS III). In such situation the poor and the marginalized fall prey to the flood disasters. As we have seen that in the developed countries, although there is physical damage in the form of loss of property, the poorer areas of the globe contribute to both physical damage as well as more number of deaths. It is always the poor who are at the receiving end

The current research was conducted in Assam where public health sector is a major problem here especially after the outbreak of waterborne diseases during and post flood. Some of the common waterborne diseases that causes severe health threats during and after the recession of floods in the district are poliomyelitis, hepatitis A and E and acute diarrhea. It was widely realised that apart from distruptions caused by the flood every year the access to health care services in the rural areas of the district is also made difficult by some socio-economic and cultural factors like poverty, illiteracy, and lack of efficient health plannings from the grass root level. Hence without an understanding of these factors it is not feasible to built a network to reach the marginalized and vulnerable people and develop peripheral rural services to the flood affected areas (Talukdar, 2005).

The following table 1.1 summarizes deaths during flood in India from 1968 to year 2000. Each time the flood has affected India, it was the poorer states like Bihar, Assam, Uttar Pradesh which were distressed, geographically located in flood plainss. It would be intersting to also understand whether these persistnent and recurring floods can be the cause of perpetual poverty in these regions. However, this study does not focus on this aspect.

Table 1.1: Death Toll in Major floods in India

Year	Number of	State	
	people killed		
1968	4,892	Rajasthan, Gujarat, North-East, West Bengal,	
		Assam	
1978	3,800	North, North-east	
1994	2,001	Assam, Arunachal Pradesh, Jammu & Kashmir,	
		Himachal, Punjab, Uttar Pradesh, Goa, Kerala,	
		Gujarat	
1961	2,000	North	
1998	1,811	Assam, Arunachal, Bihar, Kerala, Meghalaya,	
		Punjab, Sikkim, Uttar Pradesh, West Bengal	
		States	
1980	1,600	Uttar Pradesh, Bihar, Gujarat, Kerala, Haryana	
1989	1,591	Maharashtra, Andhra Pradesh, Gujarat	
1995	1,479	Bihar, Haryana, Jammu & Kashmir, Punjab,	
		Uttar Pradesh, West Bengal, Maharashtra	
1997	1,442	Andhra Pradesh, Arunachal Pradesh, Assam,	
		Bihar, Gujarat, Himachal Pradesh, Jammu &	
		Kashmir, Karnataka, Kerala, Maharashtra,	
		Madhya Pradesh, Orissa, Punjab, Uttar Pradesh,	
		West Bengal states, Rajasthan, Sikkim	
2000	1,290	Gujarat, Andhra Pradesh, Assam, Arunachal	
		Pradesh, Bihar, Himachal Pradesh, Kerala,	
		Madhya Pradesh, Punjab, Uttar Pradesh, West	
		Bengal	

Source: Statistical Handbook of Assam, 2002

#### 1.5 Research Methodology

This research was an attempt to understand the issue of water, sanitation and health problems for women affected by disasters. It also focuses on victimization of geriatric women and women who experienced pregnancy during flood conditions and effect of non-availability of sanitation facilities in their personal as well as social life. The researcher felt that this is a neglected area, which needed further research and more policy attention especially for the women who have limited mobility, such as pregnant and geriatric. Further, the study also analyzed the resilience among the women and coping mechanisms to deal with such situation. The study also addresses the role of policy, state and voluntary organizations on the above issues.

#### 1.6 Study Design

This research is both qualitative and quantitative in nature. Both primary and secondary data were used to generate empirical evidences for the study since the study focused on flood and its effect on women, the socio cultural aspects, and behaviors during flood time was also crucial to understand. Developing such understanding involved understanding their socio-cultural fabric, and learning the behavioral patterns particularly during flood time. This kind of understanding demanded deep probing into the cultural aspects of the society and the practice of the cultural norms related to gender from the perspective of those who developed these norms and culture and those who practiced these norms.

Empirical study was conducted in the three villages Majkuchi, Nashatra and Pazarbhanga in Barpeta District of Assam. Two categories included men and women from different social groups and age groups having different social status were studied. To formulate such an inquiry, qualitative information was meaningful to substantiate and understand different perspectives and dimensions of the flood and sanitation. It also needs to locate women and their perceptions and also perceptions of men. The quantitative research methodology had been applied in the study to understand the proportionate distribution of some of the variables that reflect the socio-economic status of the people in the study areas. Household (HH) interviews schedule was filled up. The main objective of this tool was to collect data on socio-economic conditions of the households, such as education, caste, availability of assets and availability, utilization

and access to water resources. The analysis of the data was done thematically and cross tabulation helped in developing an understanding of the different socio-economic and demographic variables. Village mapping was done to study the social composition of the village by talking to key informants. After social mapping of the villages, respondents have been selected, especially households where women; elderly, pregnant, with newborns are residing, for qualitative indepth interviews.. Data was also collected from the health centers and hospitals in the vicinity.

Literature review on disasters, particularly floods, gender and disasters, Public health consequences of disaster was carried out.. United Nations and other humanitarian agencies reports, governments reports were analyzed. Secondary data was useful to assess the general situation of sanitation of the population during normal course of life and at the time of flood. The sources for the data including agencies operating and providing health and relief related services are Public health department, revenue department, National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA), District Disaster Management Authority (DDMA), research papers published, government, non-government agencies and reports published by the state from time to time.

Semi- participant observations, group discussions of the respondents, especially those affected by the floods, key informant interviews with the state officials, representatives of government, non-government agencies working for relief and rehabilitation, providing services at the time of flood and after floods were also conducted. The focus of this exercise was to document experiences of women and provider's perspective to enhance understanding of issue of water, sanitation its effect on social and personal life of women with limited mobility and coping mechanism.

#### 1.7 Objectives of the study:

The broad objective of the research was to achieve holistic understanding of the different problems and issues that arise in a disaster situation like floods and affect women in particular. The approach of state policy and interventions, towards issues of water and sanitation during flood.

To meet the broader objectives the specific objectives are outlined as follows:

- 1. To understand the existing living conditions of the population in the villages under consistent threat of flood.
- 2. To understand the different aspects of vulnerabilities among women, in the given living conditions with focus on women with compromised mobility in normal course of life and flood situation and existing coping mechanisms to mitigate flood effect and resume normal course of life.
- 3. To study the water supply, sanitation during normal course of life in the flood troubled villages and its effect on the health of vulnerable population such as children and women.
- 4. To study the effect of vulnerabilities on access to drinking water and sanitation among the women of different social groups during flood situation and its effect on the health outcomes.

#### 1.8 Study area

The universe of the study constitutes three villages; Majkuchi, Nashatra under the Patbousi Gaon Panchayat and Pazarbhanga under Gumafulbari block in Barpeta district of Assam. The district is surrounded by river Brahmaputra in the south, Nalbari district in the east, the hills of Bhutan towards the north and Bongaigaon and Kokrajhar districts in the west. An important feature about the geography of the district is that its central and southern parts are very flood prone due to heavy rainfall every year. Total area of the district is about 3245 square kilometers out of which nearly 3212.67 square kilometers are in rural areas. Urban areas consist of only 32.33 square kilometers. The selected three villages are from the flood prone region of the district.

Total population of Majkuchi is 1305, Nashatra is 215 and Pazarbhanga is 604. Total numbers of households are 235, 77 and 131 respectively. Moreover, the selection criteria for choosing the villages are; Pazarbhanga, Majkuchi and Nashatra are flood prone and every year all the villages are affected from recurring floods and are considered as one of the most backward villages of Barpeta district regarding water supply, sanitation, and infrastructure and so on.

#### 1.9 Data collection process

The pilot fieldwork and visits undertaken in Barpeta district of Assam helped in understanding the housing and land holding patterns, sanitary conditions, social and economic conditions of the people of the villages. The basic demographic data in this regard was collected. First part of the pilot study was conducted as the researcher has established rapport with some of the key informants such as village leaders. Following building rapport and links with the public health engineering officials the data collection process was started with conducting census survey of all three villages.

Fieldwork was carried in three sub-phases based on time line:

- 1. Fieldwork prior to occurrence of flood: The objective of the structured interview was to gather information about the socio-economic condition of the households from each stratum. In order to collect this information a census survey was conducted using a structured interview schedule. The focal point of data collection were, collecting information on demography, social groups based on gender, caste and education level, assessing income by mapping assets, access to water and sanitation facilities. The collection of information prior to occurrence of flood was also to see the preparedness of the community towards the disasters and also the state role in it.
- 2. Fieldwork post floods: In-depth interviews were conducted in all three villages. The respondents were selected from different groups of women. These groups were identified on the basis of age and social vulnerability. Further, the immediate consistent need for healthcare i.e. women in pregnancy and post natal mothers were also part of the study. Among the respondents, who were selected on the basis of age, three criteria were applied to choose; adolescent females, females among reproductive age group i.e. 15 to 49 years of age and geriatric women more than 60 years of age. To interview these respondents a separate interview schedule was prepared. Each interview schedule intended to assess the existing life conditions and aspects of vulnerability. The respondents chosen for the first set of qualitative data collection were omitted and new set of respondents were selected for post flood qualitative data collection. These respondents were selected purposively based on informed consent and their availability during the visit of the researcher. Selected case studies were done and narratives of women who experienced problems during floods were documented, across different

classes and castes. The focus of the discussion was mainly on access to services, vulnerability and flood mitigation efforts, rehabilitation and recovery. Interviews also focused on experiences of the respondents with the floods and the flood mitigation efforts taken by state and non-state agencies.

- 3. Some respondents were selected for case studies based on their representativeness. In depth interviews were conducted to investigate and get the nuances of the flood situation on the women in a vulnerable situation.
- 4. Interviews were conducted with state officials and representatives of local governing bodies to understand state level efforts to support the village population to mitigate flood situation and its limitation.

#### 1.10 Methods and Tools to collect primary data

#### **Bibliographical studies:**

This is an important tool as they are the main secondary sources, which helped in conceptualization of the study. From the thorough review of the study materials the following research is grounded into the theoretical context. This tool was used to attain information about the different agencies of health care providers, about the relief providers like Public health department, Disaster management authorities, and published and unpublished research materials and so on.

#### **Interview guide:**

Interview guide was used to conduct in-depth interviews with the key informants in order to acquire detailed information about the village level administration of the three villages in the context of flood mitigation measures. The role of various state non -state institutions, and departments which deals with the issue of water, sanitation and medical services were also studied. Along with the guide for the service providers delivering special services, a checklist was also used. This checklist helped to gather information from each concerned department.

Institutional setup of the disaster management from national level to the village level were studied and analyzed. Some of the key informants from the institutions were; officials from the state and district flood control department and public health department, village level PRI representatives, representatives of local bodies, service providers from health department. In-depth interviews were conducted and information related to their job profile, their duties and responsibilities in rural development and in the disaster scenario were collected. These officials are directly or indirectly related to flood control department, provides information about flood mitigation measures and also responsible for providing safe water supply and sanitation during floods. ANMs (Auxiliary Nurse Midwife) and ASHA (Accredited Social Health Activist) workers were interviewed to know the plight of women and how their own work gets disrupted during the floods.

#### **Group Discussions:**

A separate guide and checklist was used based on themes for the group discussions. They were conducted to acquire information about the recurring flood situations in the study areas and also about the existing situation of water supply, public hygiene and sanitation of the respondents. Apart from this, information about the social and religious aspects to understand different socio-cultural constraints, behavior and responsibilities during the occurrence of flood for both men and women. The guideline was prepared in such a way as to emphasize on the gendered vulnerabilities during flood and focus was on women. Six group discussions were carried out, as it was observed that sufficient information was derived.

#### Selection criteria for group discussion

For the purpose of group discussion the village community in all three villages were stratified in social groups based on gender. In each group women and men were selected for group discussion separately from different families. Male and female group discussions were conducted separately. Those respondents who were part of interviews were not considered for group discussion. Following criteria was applied to select participants for the group discussion;

- a. Men and women from the families affected by flood in past two years.
- b. Men and women from the families' rehabilitated after flood in past two years.
- c. Men and women from the families affected by flood in past two years and undergone the experience of pregnancy or delivery during flood.

d. Men and women from the families affected by flood in past two years' and experiencing chronic illness of elderly member of family or death during flood.

The men and women of the selected households were informed about the research objectives and ask to participate in the Group Discussion. Those who gave their consent were called for a group discussion on specific time and date.

#### **Observational Methods**

It is through observation that the actual situation of the flood in the study areas, the sources of drinking water and condition of disposal of garbage and human excreta and also the ways people engage themselves in the indigenous methods of flood prevention, mitigation were understood by the researcher. To record the observations photographs and notes were taken while travelling through the villages. These notes and photographs were used to substantiate the themes originating from the qualitative data during analysis.

#### Rapport building

In many social science related research, this approach has been very useful in gaining confidence and building sympathetic and trustful relationship between the researcher and the respondents. In fact when the researcher has visited the field area for the pilot study it was found that many of the respondents have the tendency to draw some monetary help or seek support from the researcher as they felt that the researcher is working for the government. To break such misconception and bring clarity in understanding about the PhD academic work it was essential for researcher to spend some time interacting with the people, especially the important or influential persons in the villages. This process was carried out by doing a social mapping exercise in the villages with the help of villagers. During this exercise people were mobilized to discuss geography of the village and various resources, public places available in the village. A social map was prepared with the help of villagers indicating these geographies, resources and location of different social groups. The exercise was conducted using a guide, while no data from this exercise was used in the analysis and the exercise was conducted purely to build rapport with the village community. This helped in building rapport and drawing support and collecting unbiased data. For this

purpose a significant amount of time was spend by the researcher in the villages prior to starting the data collection.

#### **Case Studies**

Case study method was an important tool in understanding the social realities of the affected communities. As mentioned earlier the respondents were selected from the indepth interviews. However few respondents were selected using snow ball method. The basic criteria was significant event during flood such as loss of life if any or delivery during flood. In fact in the present study it was very important to record the experiences of the women particularly the pregnant women and the geriatric about their pleas during and post flood situation. Case studies were also conducted with women who delivered during floods or with infants.

#### 1.11 Sampling

The population under the study area was divided in strata based on the social (caste based) identity (Schedule Caste, Schedule tribe, Other Backwards Class, Open category). From each strata sample were drawn on the basis of purposive and snow-ball sampling methods. Purposive sampling method was used to choose women who delivered during the flood situation, in the last one year. Information on these women was taken from the local ANM and ASHA workers (outcome of pregnancy was taken as a marker in selecting women for purposive sampling as well) and according to their availability at the time of the field work. Interviews were conducted only after obtaining informed consent of the women. Considering the level of literacy the informed consent was read out to the respondents in Assamese language with the help of support from the village.

In the first place, the transcription of the data collected through group discussions and in-depth interviews for qualitative research methodology was done for the interviews. A number of themes or categories for analysis were identified from within this collected data. From the primary these were identified and recorded, further data was used to understand the nuances around several themes and develop understanding to formulate arguments.

**Table1.2 Sample size** 

strata)	interviews/GD's	
Officials from the flood control	2 interviews	
department, at district and state level		
Head/workers of Voluntary	1 interviews	
organizations working on the issue of		
flood and relief		
Village level PRI representatives	6 interviews	
Service providers from health	6 interviews	
department		
Women who delivered during flood	3 interviews	
Adolescent girls	20 interviews	
Pregnant women	4 interviews	
Elderly women	8 interviews	
Women and men affected by flood in	6 in three	
past two years	villages (two	
	each in each	
	category one	
	each in every	
	village)	
Women affected by flood	10 cases	
	department, at district and state level  Head/workers of Voluntary organizations working on the issue of flood and relief  Village level PRI representatives  Service providers from health department  Women who delivered during flood  Adolescent girls  Pregnant women  Elderly women  Women and men affected by flood in past two years	

#### 1.12 Data analysis

Data collection was done in phases. Primary phase included searching of literature on the issues related to the flood, women and vulnerability. This data was compared and compiled to make understanding of the issue in the Indian and then Assam's context. Primary data collected through In-depth interviews, group discussion, observation and cases was recorded in the local language. After recording the data was transcribed. A number of themes or categories emerging from the data set were coded and recorded separately. Further relationship between the themes were identified and elaborated. The cases collected and developed systematically to explain the effect of the flood and mechanisms to cope with the disaster adopted by the village community particular by women.

#### 1.13 Limitations of the study:

One of the major constraints faced by the researcher was that majority of the flood victims thought she represented the government or NGO and had come for relief purposes. The researcher had to face these questions many times 'what is the government doing for us, what benefits would we get if we talk to you and in some cases the researcher had to face the brunt of people's frustration in the form of non-cooperation in answering the questions during survey and abusive taunts by the alcoholic men particularly in Namakha area in Majkuchi village. Since the study area Barpeta district have been perennially affected by flood, people with great economic hardship expect some kind of assistance in the form of money, food and shelter from outsiders who visit the flood affected villages. Also in many situations the researcher felt that answers to certain queries were influenced by this notion and got reflected in the replies. Another important issue that appeared after the researcher started the data collection process was that since the study was designed to be ex-post facto, therefore in many cases the responses obtained from the respondents were mainly depended on whatever they could recollect after facing those hard time during flood.

Again mode of transportation was also a major problem. Transportation and communication to Pazarbhanga village was the most difficult. There are very few tempos that passes through the village. Since they are found rarely in the area most of the time they are heavily crowded and it was extremely difficult to find space for one

person. Consequently the researcher hired her own auto for the purpose of data collection which was extremely expensive and as a result of which the researcher could visit Pazarbhanga for only 30 to 35 days in the tenure of the entire data collection process. Even in other two villages the researcher had to return before evening due to lack of conveyance after evening. Language barrier was another issue in Pazarbhanga village. As a considerable percentage of households in the village are originally Bangladeshi migrants who have settled in the village many years back they have a strong accent even when they try to speak in Assamese and Bengali. As a result the researcher had to take the help of a local respondent in some cases who could speak and understand Assamese.

#### 1.13 Chapterisation plan

The study is compiled in six chapters.

- 1. The first chapter introduces the study and discuss the rationale behind undertaking it. The methodology adopted for the study is discussed here.
- 2. The review of existing literature about flood and its causes and impacts, vulnerability issues and a detailed theoretical perspective on women and flood is discussed in chapter two.
- 3. Chapter three gives an overview of the study area and socio economic profile of the research area.
- 4. Chapter four provides a general idea about health care services in Barpeta district in general and access to this services by the three villages in particular.
- 5. Chapter five have detailed discussions about the vulnerabilities in general for the population major variables influencing the vulnerable condition of different social groups and explaining different determinants affecting women's health. This chapter also discusses how the people organize themselves to deal with vulnerable situations.
- 6. Following detail discussion on the findings from the data last chapter concludes with listing out different types off situation adding to vulnerability of women and what best is required to improve the situation from researchers' point of view.

#### **CHAPTER TWO**

#### Flood and Vulnerability: Review of Literature

#### 2.1 Flooding and Health issues:

It is often observed that at the time of flood there is much attention being laid to destruction caused to infrastructures rather than some of the other important aspects like the different health problems caused during- after the occurrence of flood and also how to avoid major health issues by following certain instructions. The media which is responsible to project the fatalities caused by flood to the world generally emphasis more on the physical destruction rather than the implications of flood on the health of people, particularly women, children and geriatric. It is also important to note that although government personnel's from public health departments, NDMA, SDMA and other non-governmental organisations immediately respond to the disasters, their main concentration lies in the larger issues like immediate evacuation of the people from the flood affected areas and relocate them to the relief camps, arrangement for relief funds and also to provide safe drinking water and sanitation to the people (Reddy 2013). However, there are studies which shows that whenever, such natural disasters like flood occur especially in developing countries, serious sanitation problems and different water borne and vector borne diseases threaten disaster affected populations particularly the deprived and the vulnerable, as they do not easy access to safe drinking water and food. In fact the major risk factor associated with flood and water is contamination. Moreover, it is seen that out of the 14 major floods in the world from the period 1970-1994, some of the major outbreaks have been caused by water borne diseases, like the major diarrhoeal outbreak in Sudan in the year 1980. The massive flood of Mozambique in the year 2000 also gave rise to the incidence of diarrhoeal diseases. If we consider the case of India also, the flood of West Bengal in 1998 led to massive outbreak of cholera (Gayer & Connolly, 2005).

Again the flood-affected victims always have the risks of being contracting many other water borne diseases from direct contacts with the polluted water. Such diseases like dermatitis, conjunctivitis and other nose and throat infections are common in flood-hit areas (ibid). Again flood also leads to the prevalence of many vector borne diseases. As

in many cases due to constant accumulation of water caused by incessant rainfall in the same place, again and again might give space for certain vectors like mosquitoes to breed in these places. As a result of which people who are already affected by the flood suffers the most as they are in direct contact with such breeding site (ibid). Diseases like malaria, dengue etc. are the potential threats for these flood affected people. Moreover the risks of outbreaks is increased by complicating factors, such as changes in the human behaviour like increased exposure to mosquitoes while sleeping outside and many times even if there is a slight pause in the disease control activities in such flood hit areas. Another factor which is responsible in the increase of risks is the changes in the habitat which promote mosquito breeding like landslide, deforestation etc. (ibid). There are also reasons of migration of labour population for relief and rehabilitation work from the endemic region, who carry the host and spread the disease, as observed in the Islands of Nicobar (Reddy 2013).

Again molds<sup>1</sup> and mildews<sup>2</sup> can also cause potential threats to the flood victims particularly people with allergy and asthma problems as they become more susceptible to upper respiratory diseases and other problems like sore throat, dizziness etc. (CDC, 2006; FEMA, 2005). Besides flood related health problems, any kind of natural disasters also have implications on the mental status of the disaster-affected people. Due to extreme exposure to such situations, people suffers from prolong mental and physical stress (Aicha Brahmi, Keophet Poumphone, 2002). Post flood situation also, people take a long time to come out of the trauma and it is often observed in many studies that there is a change in behaviour including children, as they become more sensitive and aggressive (Noji, 1997). However, there are also other health threats, which are caused by the flood. It is observed that the relationship between any kind of natural disaster and communicable diseases is often misconceived. The risk for outbreak of communicable diseases becomes a major fear among the affected

<sup>&</sup>lt;sup>1</sup> Molds are fungi that can be found both indoors and outdoors. Molds grow best in warm, damp and humid conditions, and spread and reproduce by making spores. Mold spores can survive harsh environmental conditions, such as dry conditions, that do not support normal mold growth. Molds can cause symptoms like nasal stuffiness, eye irritation, wheezing or skin irritation. Also people with chronic lung illnesses like obstructive lung disease may develop mold infections in their lungs.

Source: www.cdc.gov

<sup>&</sup>lt;sup>2</sup> Mildew is a form of fungus. It appears as a thin, superficial growth consisting of minute hyphae (fungal filaments) produced especially on living plants or organic matter such as wood, paper or leather. Both molds and mildews have a bad odour and are responsible for certain human illnesses.

Source: Compact English dictionary, Merriam-Webster's Online Dictionary, 11th edition.

population immediately after any kind of natural disaster in which the poor and the fragile fail to understand that the risk factors for outbreaks after disasters are associated primarily with the displacement of the people. It is the polluted environmental situation, which has deep repercussions on the availability of safe water and sanitation facilities, also the underlying health status of the population and lack of healthcare facilities further aggravate the situation. In fact access to safe water and sanitation is always compromised, whenever there is any kind of natural disaster particularly during prolong and recurrent flood type situation which gives rise to diarrheal diseases as the drinking water is contaminated. Hence communicable diseases are common among the displaced population as there is dearth of safe drinking water supply, sanitation and unavailability of health care services (Watson et. al, 2007).

Although, some people are not directly affected by floods, but it has a strong impact on the lives of the people. Drowning and injuries caused during flood can also lead to the state of trauma. Other repercussions like flooded roads, power cuts and lack of communication can also have impact on health of the people. In such situations it becomes difficult for the people to access medical facilities, when they needed the most. It also becomes difficult for the government officials to provide immediate relief as in most of the cases all the ways of communication and transportation to these areas are either jammed or closed. Eventually it has a strong implication on the lives of the people. It is very essential to understand the different levels of risks associated with the type and phases of each flood disasters and also to analyse the risks involved with each phases of the disaster. Moreover, it is also quintessential to understand the post-flood situation as in most of the cases emphasize is laid on the on-going flood situation and post flood environment is often neglected which gives rise to many infectious diseases due to contaminated water, spoiled food and hazardous mold (Clements, 2009). Hence the greatest public health challenges, followed by flood are associated with the environmental health impact of flooded infrastructure. Clement (2009) in his work on Disasters and Public Health: Planning and Response, mentioned that Healthcare and Public health preparedness measures associated with floods must be specifically tailored for each region according to the types of potential floods that may occur and the populations that may be impacted. However despite heavy finances on prevention and mitigation of floods every year there is major destruction and casualties that takes place every year. Since it has already been mentioned that a large number of population

is affected by natural disasters every year, particularly in the developing countries, lack of access to communication and deficit in the relief materials becomes an important cause for the rising morbidities (Kar, 2009). While discussing the impact of flood on the health of people it is important to keep in mind that lower economic status, lack of communication access, non-availability of healthcare services within their vicinity and proper housing facilities are some of the important determinants which add to the misery of the people (Kar, 2009).

In disaster related studies, it is found that there is not sufficient data on how the cultural perceptions of the people, stress, resilience and coping ways also add to the psychiatric morbidity in aftermath of natural disasters especially in developing countries. In such situations emphasize should be laid on mental health research and programmes as it is observed that there is difference in the intensity and variations in the psychiatric problems of the people belonging to different cultural and social groups post any kind of disaster (Kar, 2009). Most of the available studies show that majority of the victims, who suffers from acute psychological effects especially stress and depression is among the geriatrics. Particularly in Indian context the percentage of psychiatric morbidity among the elderly people are relatively higher during post disaster reference (ibid). Friedsam in his work on 'Reactions of older persons to disaster caused losses' in the year 1961 expressed that elderly people are more vulnerable during disaster as during adverse situations they are the ones who are less likely to get the warning and their reluctance to evacuate in such circumstances and sudden change in the life style leave them with behavioural changes (Phifer et. al., 1988). Kilijanek and Drabek, (1979) in their work suggested that elder people are more susceptible to heavy economic losses in terms of housing and assets as they become extremely vulnerable in the aftermath of disaster, as it becomes difficult for them to secure the economic losses and the heavy debt that follows. However, it is to be noted that although there are studies being done on the mental health of the disaster affected people, it is seen that majority of the studies are based on elderly people and very few initiatives have been made to understand the psychological condition of women especially after adverse situations.

#### 2.2 Flood situation in Assam

If we consider the field area for the study, which is Assam, one can observe more or less a pattern similar to other parts of the country. Being the fourth poorest state in the

country, it indicates low infrastructural development of the state and inequitable distribution of resources. The state faces many problems; such as degradation of the environment which has happened due to increase in urban population and very less emphasis on garbage disposal, unhygienic conditions and the problem of contaminated water. Sanitation and water supply is pathetic in the rural areas of Assam. Only 40 percent of the total rural population has access to any kind of toilets. As vast amount of land is situated in the low-lying areas, it is prone to natural calamities like floods, as people tend to reside on the flood plains and hazardous zones. Moreover, the state does not offer much scope to people to raise their economic condition and standard of living, as mainly the occupational pattern is such that it does not generate human resources for development sectors other than agriculture. Due to recurring of floods every year, agriculture also do not fetch people much of economic gains. The recurrent disasters every year keeps the population in perpetual poverty. Consequently, majority of the rural people are poverty stricken which has a direct implication on the health of the people.

It is important to note that the unique geo-climatic conditions of Indian sub-continent make this region among the most vulnerable to natural disasters in the world with their occurrence at high frequency. In fact Assam is among the highly vulnerable state when it comes to floods, river bank erosion, sand casting, landslides, cyclonic storms. The exposure to such hazards is also aggravated because of the location of the State in the North-Eastern region which is one of the most seismically active regions in the world. Assam is said to receive high torrential rainfall ranging from 248cm to 635cm which also contribute to the flooding of the Brahmaputra River (Assam State Action Plan on Climate Change, 2012 - 2017). The problem of floods in Assam is well known and probably the most severe in the country. The rivers responsible for flood in the state are the Brahmaputra and the Barak and their fifty-two tributaries. The river Brahmaputra particularly is characterized by a scenario of deluging floods and menacing erosion hazards that cause mayhem of damage and destruction each year bringing untold miseries to the people and shattering the already fragile agro-economic base of the region (Goswami, 2003). The Brahmaputra river flows through Assam from east to west over a length of approximately 650 kilometres. Its main branch originates in the Tibetan plateau, flowing from west to east as the Tsangpo River, and then turns south through the eastern Himalaya as the Dihang river to enter

Assam, where it is joined by other branches to form the Brahmaputra. The Barak River rises in the Indian state of Nagaland at an elevation of approximately 2,300 meters and passes through the Manipur Hills of Manipur state over a river length of nearly 400 kilometers. It then flows generally westward from Lakhimpur through the Cachar Plains region of Assam over a river length of approximately 130 kilometers to enter Bangladesh near Bhanga (NHC, Background paper, 2006).

Analysis of flood data indicates that the intensity of flood is increasing in the recent years. The area affected by floods during the year has also been increasing over the years. The average area affected by floods during the period 1971-1988 was nearly 30 per cent higher than the preceding 18 years of floods (Sarma, 2003). There are many reports of occurrences of heavy floods in Assam during the years 1642, 1750, 1787, 1795, 1862, 1867, 1870, 1886, 1918, 1935, 1962, 1966, 1968, 1969, 1970, 1973, 1988, 1997 and 1998. However, the 1988 flood caused the maximum destruction and suppressed the water level of all the floods in the previous years (ibid). The table no. 2 analyses the impact of flood with respect to the area and population affected since 1953. As the recurring flood continue to hit the state, those affected are having a nightmare caused due to inadequate relief camps and on top of embankments with little amenities, which clearly throws light on the poor administration of the state government. In fact all these matters are not taken care due to the Centre's reluctance to provide adequate funds for tackling the crisis, especially in the matter of restoration of flood damaged infrastructure and for initiating long term measures to reduce the impact of flood. As the flood continue to create havoc in the State with unfailing regularity, it is essential on the part of the administration to have a serious review of the situation for putting in place a long-term mechanism to check the menace.

As far as flood management measures are concerned in Assam, kilometers of embankment have been constructed in the name of flood control but not a single reservoir has been constructed. As Bhattacharya have quoted in his work, "Efficacy of embankments is sometimes questioned because with the raising of the river bed level, the embankments become inadequate and further rising of the height is not often taken up due to lack of financial resources" (Bhattacharya, 2003: 3). There are also non-structural measures, which are set up in the state to control the recurring flood every year. The different non-structural measures are flood plain management, flood

forecasting and warning and other mitigation measures. In fact the flood forecasting system has been set up in the state by the CWC (Central Water Commission) with operational sites and offices at Dibrugarh, Tezpur, Guwahati etc. (ibid). However Bhattacharya in his work noted that although the flood warning system is installed in the state, yet it does not reach to the people, who live in the villages and who are more prone to suffer in floods (ibid). Institutions like Brahmaputra board, Flood Control Departments should also create dependable database and take initiatives in the direction of preparing documents on different aspects of flood and its management.

It is also essential to observe that until the tenth five year plan, matters related to flood and erosion was executed by short term measures from the state plan, central plans, Additional Central Assistance, North Eastern Council (NEC) and National Bank for Agriculture and Rural Development (NABARD). However, the fund released by these institutions was inadequate to tackle such massive floods that strike the state every year. It is only in the 11th five year plan where the issue of flood has been given due consideration in financial assistance and an amount of rupees 720 Crores was released to work on the scientific and technological requirements for enhancement of flood control measures in the state (Economic Survey Assam, 2010-11). However, the section on State government policies and programmes for flood control in the following sections shows that the recognition of floods as major problem in India started in British period and from time to time, there were committees which were set up and policy prescriptions were given. Despite the recognition of the gravity of situation, there are no concrete measures to mitigate floods in different states and the damage to lives and livelihoods continue to abate, and ironically increasing every year.

In the recent years, flood is damaging more and more, especially damage to the population and the property. Table 2.1 in the next page reflects the data of flood damages from the year 1953 to 1998. Within that period it is observed that more number of people are being affected, although the area affected is more or less the same. With the increasing number of people affected, the loss in economic terms is also increasing. Flood in 1988 caused serious damage by affecting more area and more number of people whereas, flood after ten years affected less area, impacted more significantly, the number of people causing serious damage to the property. Over the period, although the area affected by flood remains more or less the same, each time

flood occur, the number of people being affected is increasing. This could be due to increasing population in the region. Table 2.1 provides information about the damages caused by flood during 1953 to 1998, in Assam.

Table 2.1- Flood damages (area, population affected and financial) during 1953 to 1998 in Assam.

S.No	Year	Area Population		Total	
5.110		affected	affected (million)	damage	
1	1953	0.08	0.41	2.66	
2	1958	1.25	0.47	2.7	
3	1963	0.58	0.83	2.06	
4	1968	0.41	0.92	8.36	
5	1973	2.75	2.29	16.41	
6	1978	0.31	0.92	4.08	
7	1983	0.73	2.26	56.18	
8	1988	3.82	8.41	663.84	
9	1993	1.348	5.261	0.215	
10	1998	0.972	4.698	700	

Source: Flood control department, Govt of Assam, Revenue Dept., Govt. of Assam

Although over the years, much have been said and done for the prevention and mitigation of flood, every year the floods caused by either heavy rainfall or breach in the embankment is causing massive devastation to human lives, infrastructure, public and private properties and the important institutions like schools, hospitals which eventually have irreversible implications on the overall situation of the people. New programmes and schemes had been set up, there is harmonic coordination between different state agencies to work for the upliftment of flood scenario in Assam, yet they have not been able to establish any concrete solution to meet the raging problem that swept away the lives and properties of many lives annually, particularly the gravity of repercussions on the marginalized section of the society. The following table 2.2 presents a detailed statistical data on the damages caused by flood in the recent years. Although there is a decline in the areas affected and the number of people killed, there is substantial amount of damages caused by the recurring flood in these years

Table 2.2. Damages caused by flood in Assam

	Year			
Damage	2007	2008	2010	2013
Area affected (In hectares)	1504146	416000	NA	
No. of villages affected	10295	3019	3630	1592
Crop area Affected (In hectares)	674671	314000	147038	71213.79
Value of crop Lost(Rs. In Lakh)	N.A	329	3678.87	
Population Affected (In 000)	10868	2906	2546	848
Value of houses Damaged (Rs. In lakh)	N.A	29335	1099.6	
No. of cattle lost	N.A	8002	3754	1,81,114
Houses damaged (fully)	15846	30315	4864	44
Houses damaged (Partially)	N.A	26235	49638	547
No. of human life lost	134	40	17	NIL

Source: Office of the Chief Engineer Water Resources department and State Revenue and Disaster Management Department Assam.

In the last ten years the waves of flood, which took place in the year 2007 had caused most adverse situation in the state. Most of the districts were affected including the study area i.e, Barpeta district. As mentioned in the Table no. 2.2 in which a detailed account of damages caused by flood in Assam is reflected, around 1504146 hectares of land among 10295 villages were affected. Total number of lives lost was 134. It is observed that although in the following years the population and the area affected was comparatively low, it cannot be said that the situation is less grim or have improved over the years. Even though there was a decline in the trend, the ravaging flood continued to cause hazards in the different part of the state. Although the different interventions and initiatives regarding mitigation and prevention of flood have been discussed in the subsequent sections, prevalence of some lacuna or gap have not resulted in proper implementation of the state and the centre's initiatives failing to which have resulted in consistent poverty and under development over the years.

Three waves of flood between July to September 2012 left 102 people dead and displaced nearly 12 million people in 25 of total 27 districts in the state. Out of which the worst hit districts were Cachar, Karimganj, Hailakandi, Morigaon, Barpeta,

Lakhimpur and Dhubri (Hussain, 2012). Nearly 10,000 villages were badly hit by the raging flood within an area of 825,000 hectares land. The flood waters have also submerged the 430 square Kilometers of Kaziranga national park killing many animals. The two waves of flood, which occurred in the month of July-August, 2015 had hit the state with devastating consequences. Many embankments had been breached and overtopped and communication was snapped in many parts of the state. Around 19 districts were hit by the two waves of flood with large-scale inundation of cropland and human habitations. As per the data collected from the flood bulletin of Assam State Disaster Management over 15.88 lakh people were affected by the two waves of flood. Among the most flood affected districts Barpeta is the worst hit with over 2.19 lakh affected people followed by Dhemaji with over 1.50 lakh, Morigaon with over 1.46 lakh, Dibrugarh with 1.28 lakh and Sonitpur over 1.26 lakh of people were affected. Nearly 1.76 hectares of crop area in 2199 villages under 74 revenue circles of 19 affected districts was damaged by floodwater. Of the total affected population around 2.70 lakh people have taken shelter in 385 relief camps opened by the administration across the state (The Assam Tribune, 2015:1).

# 2.3 Understanding of vulnerability aspects to disaster

In the recent years, the world has viewed in horror the kind of destruction and havoc that have taken place across the countries. Although these events might have taken place under various circumstances, there is one common factor, which binds them under a similar platform, which is, that the majority of the victims are women, children, elderly, minorities and the disabled. Many disaster theorists have clearly expressed, how the social structure and roles produce extensive human suffering and differential impacts. Thus, focusing explicitly on the social aspects of disasters, social vulnerability to disasters reflects on how the characteristics of an event alone do not create the tragedies that unfurl (Brenda, et.al, 2010).

It is essential to incorporate the vulnerability approach in the course of any disaster related study, as it suggests inequalities in terms of access and availability of resources and opportunities and exposure to risk, are mostly confined to the weaker sections of the society. In fact, there are many ethnographic studies, which reflect that this group of people are severely impacted at the times when there is a natural disaster. Although the

term vulnerability has been widely used by many researchers still it means different things to different people (Cutter, 1996).

However, in the present context the following definition by Blaike will be considered in the course of understanding the different aspects of vulnerability. The term vulnerability is defined as "the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard" (Blaike et al, 2004:11). It thus follows, that the impacts of natural disasters are never merely determined by nature on its own (Neumayer & Plumper, 2007). Moreover, Cannon in his work on Vulnerability analysis and the explanation of natural disasters, reflected on the issue that, there are no generalized opportunities and risks in nature, but instead there are sets of unequal access to opportunities and unequal exposures to risks, which are a consequence of the socio-economic system (Cannon, 1994). The group of people who are considered vulnerable are generally categorized under age, class, ethnicity, gender and physically disabled. With increasing research and literature on this ground in West, physical geographers and public health scholars have revealed that a better mitigation of negative disaster impacts is contingent on a better understanding of the socially constructed vulnerabilities of specific groups of affected people (Noji, 1997; Alcantara-Ayala, 2002; Degg & Chester, 2005). The concept of social vulnerability, which is again one of the dimensions of vulnerability, has emerged lately with the rise in the literature based on natural hazards and disasters. Particularly in disaster literature, social vulnerability often reflects to how social, economic and political factors influence the extent to which the different communities in the society experience the impact of a disaster (Blaike et. al., 1999). 'These social vulnerability factors are often interrelated and operate through the primary mechanism of unequal access to social, economic, and political resources and the decision structures that govern them' (Fothergill, 1998: 11).

Disaster risk is socially distributed in ways that reflect the social divisions that already exist in the society (Enarson etal, 2007). Therefore, the different communities who experience such conditions are mostly deprived from any important decision making institutions and have serious implications on their psychological, physical, political or economic conditions. Among these however, the poor, the geriatric, minorities and particularly females are at higher risks. Moreover Ariyabandu and Wickramsinghe's

book on 'Gender Dimensions in Disaster Management: A Guide for South Asia' puts forward convincing arguments that the disaster management approach should be revisited and make it more gender sensitive. Their work also presents an in-depth analysis of the differential vulnerabilities of men and women in facing and coping with disasters. Based on the findings of the Beijing Action Plan, which was adopted in the 'Fourth World Conference on Women' in 1995, it was noted that the social and economic impact of natural disasters and epidemics are more or less invisible in any policy documents. Hence, in response to the findings of the Beijing Action Plan, the twenty-third special session of the General Assembly also raised an issue in this regard and acknowledged the fact that there is an increase in casualties and damages caused to women by natural disasters. Eventually, it raised awareness from the gendered perspective about the inefficiencies and inadequacies in existing approaches and interventions while responding to emergency situations (Kumar, 2003: 10). Nevertheless a detailed discussion in this regard has been mentioned in the section on women and natural disasters.

However, over the period of time with more emphasis and research which have been done in this field, there are number of tools and approaches that have emerged to identify the relationships between vulnerability and disasters. It is essential to understand the relationship as it is useful in terms of identifying the different causes of disasters and contribute to the making of an effective disaster management policy and practice (Ariyabandu and Wickramasinghe, 2003).

Often gender based inequalities interact with class, race, ethnicity and age which put many women and girls into high risk and it leads to other sets of inequalities with respect to enjoyment of human rights, political and economic rights, land ownership, exposure to violence, education and health (particularly sexual and reproductive health), and consequently this makes women more vulnerable during and after disasters. Some of the recent experiences are enough to understand how women and children become vulnerable and helpless during such events. A 10 year old girl wandered homeless trapped by rag pickers became beggar and was raped after her family was displaced by flood in Uttarakhand in the last Kedarnath tragedy which took place (Outlook, 2014). This is not an isolated case there are several reports that brought the terrible human horror aftermath of natural calamity. The media labelled the groups of

goons looting killing and raping vulnerable peoples as 'Human Vultures'. The main victims of these vultures were elderly, women and children and the main atrocity was rape (Dailybhaskar.com, 2013).

Natural disaster like flood creates disasters that quickly divest everything from individuals to make them vulnerable for all kind of threats. Even after surviving the deadly peril, women and children remain at a constant threat of being trafficked. Uttarakhand disaster is not the only incidence; the places with recurring occurrence of floods have become epicentres for violation of human rights and indeed human dignity. Ram Deo Prasad, Bihar's Child Labour Commission in 2008 pointed out that children in the districts of Supaul, Araria, Saharsa and Purnea were being sold for as little as two hundred rupees per child during flood situation (Sehgel, 2008). Another case of 40 children, were rescued in Mumbai reportedly trafficked from Assam (Bhattarchajee, 2014). At least 4,219 children have gone missing from Assam in the last five years. Of the untraced children, some 2,718 are female and 1,501 male (Bhattarchajee, 2014).

Around 87 percentage of Assam's population is based in the rural areas and of these people, a large number are living below the poverty line. Repeated floods in the region have resulted in the shift of livelihood patterns. Mostly due to erosion in the severely affected area, the population is unable to sustain agriculture that then traps families in poverty (Dutta, 2013). As a result of desperate condition families fall prey to traffickers and send their children away to earn. Unemployment adds fuel to make youth vulnerable. This situation makes it hot bed for the traffickers to trap innocent children and women, who land up in either bonded labour or brothels. According to Nedan foundation, NGO working in the field of human trafficking in Assam, since 1998, 11,000 people are missing in Assam whereas the state machinery has no answers to where they are?' (Nedan foundation nd). The state records as one of the highest internally displaced people in the country.

The socio-political conflicts and natural disasters are the central causes, which have resulted in these regions to become the supply points. The supply line is very well organized, the route is well marked, and the geography of the state is also conducive for trafficking. While understanding the trafficking problem in the disaster hit area, it is important to note that it is a means to some end, for the family selling the children is a means to come out of desperation in the poverty stricken situation, although it does not

result in the same. And for the trafficker it is a means of economic benefit. The critical transaction of money and physical transportation of a person in different geographies unwillingly or ignorantly ends up in exploitation. The trafficking sometimes is myopically understood as synonymous to prostitution although some times the trafficked person ends up in sex trade mostly girls and women, it is much more than sex business. It has physical, psychological, economic, social and moral dimensions to it. The issue is not new to the society. It has been happening since time unknown. Any modern society would not accept in its morality the trade of a person. However the social cognizance and a resistance to this social evil have not been noticed, apart from institutional mechanism to protect victims. Many organizations and institutions of law are working to deal with the problem. Although, the efforts seems not yielding the required results as the issue is getting bigger and serious.

The critical question is in the enforcement of law. In the disaster prone zones, laws including ITPA (Immoral trafficking prevention Act) enacted in 1956 or Indian Penal Code needs to be given careful consideration. The Immoral Traffic Prevention Act is accused to be limited to prohibiting prostitution and prostitution related activities and does not look at the trafficking in a larger perspective (Mattar, 2004). However according to the new amendment Section 370 criminalizes anyone who recruits, transports, harbours, transfers or receives a person using certain means (including threats, force, coercion, fraud, deception, abduction, abuse of power, or inducement) for purposes of exploitation. Exploitation in turn is not defined but is said to include any act of physical exploitation or any form of sexual exploitation, slavery or practices similar to slavery, servitude, or the forced removal of organs. Punishment ranges from 7 to 10 years' rigorous imprisonment with fine (Kotiswaran, 2013). Although the laws exist, for various reasons, the different provisions of this special law are not being used and, furthermore are often misused and abused. One of the main reasons, as research has shown, is ignorance and lack of understanding of these provisions (Nair, 2007). As it has been seen that many times during disaster such cases go unnoticed or not even recorded. In case of the victim of trafficking the most important concern is the background of poverty and illiteracy where articulating and narrating the event makes it difficult. In a general case there are several punishable offences, found such as sold, bought, wrongfully restrained, use of force, physical injury, criminal intimidation, rape, gang rape, subject to perverse sexual exploitation etc. The primary right, therefore to be

ensured to the victim is, the right to be heard. But to know and understand the whole experience needs a patient ear and compassion. The law enforcing agencies are lacking these virtues. As a result, weak prosecution and almost no convictions are the biggest challenges before anti-human trafficking agencies.

The question of prone communities and their vulnerability to various social evils especially trafficking is not merely the question of law but it is an issue of complex reality of poverty, illiteracy and ignorance. Although the law is an important aspect of protecting vulnerable communities, it is not enough. What is important is for the state to protect citizens in the ecologically fragile zones from the effects of disaster hazards. Effective implementation of poverty reduction programmes, employment generation and most important education would be the best means to address this social evil. The protection of citizens from disasters and disaster-induced trafficking would also require the state to recognize trafficking as a problem related to the larger issue of public health.

## 2.4 Models of vulnerability

As already mentioned earlier, conditions of vulnerability are a combination of factors that include poor living conditions, lack of power, exposure to risk and also the lack of capacity to cope with shocks and adverse situations (ibid). Moreover in evaluating disaster risk, the social production of vulnerability is equally important to understand and should also be addressed with equal emphasis as the natural hazards. In order to understand risk in terms of vulnerability analysis in specific hazard situations and also to show that different people have different capacities to deal with the adverse situations, two related models of disaster were developed by Blaike, David, Cannon and Wisner. Their 'Pressure and Release' (PAR) Model was suggested to explain the causes of disaster and show 'how disasters occur when natural hazards affect vulnerable people' (Blaikie, et.al, 1994). Their vulnerability is rooted in social processes and underlying causes which could be often remote from the disaster event itself (Blaikie, et.al, 1994:46). The basis for the 'Pressure and the Release Model' is that a disaster is the intersection of two opposing forces: those processes generating vulnerability on one side, and the natural hazard event on the other. The 'release' idea in the model is to conceptualize the reduction of a disaster; in other words to relieve the pressure, vulnerability has to be reduced.

Among the root causes of the PAR model, the most important ones are basically those, which have economic, demographic or social foundation (ibid). Such foundations have its implications on the society's social, political and financial systems, which eventually has its repercussions on the administration of the government and in the formulation of public policies. Through this, the authors intend to throw light on the fact that how 'power is disseminated across social groups and within the body politik and consequently Blaikie and his colleagues mentioned that how people at low economic levels tend to have less power over their socio-political conditions. Hence, because of such prevailing disparities, risk vulnerability is greater among them. The dynamic pressures on the other hand are processes that have an impact on the root causes and lead to particular forms of vulnerability. For instance, rapid population growth and urbanization, loans and debt re-payment, continuing deterioration of land due to erosion and deforestation, and growing demands of land leads to put pressure on the marginalized group of people, which results in pushing them towards unsafe conditions. By unsafe conditions, Blaikie refers to conditions, which are highly visible forms of vulnerability like fragile physical environments, vulnerable societies or groups and public-political actions (Wickramsinghe and Ariyabandu, 2003). Poor people are often pushed to unsafe areas like barren lands, drought prone areas and low-lying areas, which are prone to floods and in mountain slopes. They are often deprived of even the basic essentials of life like education, markets and health services. These people do not hold any kind of resources like land, capital or information and for that matter they lack participation in any kind of decision making in any governmental institutions. Consequently, they live a very fragile life that is vulnerable to shocks like natural hazards and eventually they are at risk to disasters (ibid).

So basically 'Pressure and Release' model is an organising framework outlining a hierarchy of causal factors that together set up the pre-conditions for a disaster. It could also be considered as a 'pathway progression' of vulnerability or 'chain of causation' (Blaikie et.al, 1994). It is a sequence of factors and processes that leads us from the disaster event and its proximate causes back to ever more distant factors and processes that initially might have little to do with causing the disaster. However Blaike and his colleagues later criticized that the PAR model does not provide a detailed and theoretically informed analysis of the precise interactions of environment and society at the 'pressure point', at the point where and when the disaster starts to unfold (ibid). So

in order to bridge the gap they eventually presented a modified framework, which deals with people's capability to 'access' assets and livelihood opportunities, which would enable them to reduce their vulnerability and disaster. Blaike with his colleagues considered this model to be more appropriate in the study of people's vulnerability in disaster related studies as this model is an expanded analysis of the principal factors in the PAR model that relate to human vulnerability and exposure to physical hazard, and focuses on the process by which the natural event impacts upon people and their responses. However, in the present study clearly both the models are quintessential in understanding the aspects of vulnerabilities in a flood-affected area. Since flood hazards have differential impact on the people resulting from the vulnerability caused by different socio-economic conditions in which they survive. In the Indian context Caste, Class, Gender and other patterns of domination plays an important role in determining the availability and accessibility of assets and also people's hold over livelihood opportunities. These are some of the pre-requisites, which determine the initial prehazard conditions of the people and also does it determine the patterns of vulnerability caused to this people depending upon their existing socio-economic condition (ibid). It is the Access model, which describes the different mechanisms that turns flood hazards into disaster. For instance the location of people's home, whether it is located in a flood prone or low lying area and also the location of their work places. The Access model also deals with an important aspect, which is the daily pattern of people's lives and their regular activities, which would enable the researcher to understand the causes and variation of disaster impact upon the people. Also does it bring together the different agencies from local, state and centre to work for the mitigation of disaster affected areas. These are some of the important variable, which not only causes death risk but also leads to destruction of assets and diminish livelihood opportunities. Hence these could also be explained via PAR model for floods, which explains how the more remote root causes of flood vulnerability are translated into unsafe situations (Blaike et.al, 1994:206).

Caste discrimination and different class groups are important variables to understand vulnerability especially in the Indian context. Gender also is an important variable to understand differential vulnerability. Since it is a known observation that economic and cultural systems are male-dominated and consequently there is unequal distribution of power and resources between men and women. There are many studies, which shows

that women are more prone to post flood diseases as they consume very less which has nutritional value and also because of physical susceptibility. As Blaike would mention 'men's and women's time patterns of daily and seasonal activities also differ, and this may produce inequalities in their exposure to flood hazards' (Blaike et.al, 1994: 206). Moreover children also live with the women and not men even in such situation, which eventually increases the intensity of vulnerability for both.

## 2.5 Coping Mechanisms as Disaster Strikes

The floods devastate life in many ways primarily by damaging the livelihood of the affected population to expose them to vulnerability. The effect of damage extends from economic, physical to psychological. Loss of life and loss of property have deep impact on the psychology of the affected survivors. In such situation relief from any source plays an important role. Those communities facing the frequent risk of disaster over the period of time accumulated the experiences and devised their own mechanisms to deal with the situations although at times they are not adequate but hold importance to prevent loss of life and property. Such example to prevent damage from frequent risk of flood could be seen in Assam. During heavy rains, large areas surrounding Assam are submerged, forcing many villages and towns in Assam to become isolated. Nandeswar Village is located in Goalpara District (Gram Panchayat-Karipara under Matia Development Block), Assam, India. The agrarian society has developed their experiences in to indigenous knowledge to protect their farms by stopping the erosion of soil. Planting of bamboo trees along fishponds and paddy fields prevents soil erosion and stops water from submerging low areas during peak flooding days. This mechanism reduces the intensity of damage due to flood. This is not an isolated single example but there are several other places and technologies developed through indigenous knowledge by affected community such as Dhani a hut prepared for shelter during flood in Rajasthan (UN/ISDR, 2008).

The indigenous coping mechanisms to prevent physical economic loss could compliment the modern scientific knowledge to produce the viable solutions to cope up with the risk of disaster. As Shea and others observed, that today's rate of change may be reducing the viability of indigenous knowledge, it should still be considered a valuable knowledge base, from which it may be pertinent to draw on for devising new technologies or techniques for coping (Shea, 2003 cited in Mercer, 2010, p. 250).

"Scientific knowledge may strengthen the ability of indigenous communities to cope with climate change, whilst retaining their traditional practices" (Kelman et al., cited in Mercer, 2010, p. 252). People's experiences of dealing with the distress caused by the flood could be collected and incorporated in the large-scale relief work to make a cost effective solution to damage caused.

Figure 2.1 Coping mechanisms adopted during various phases of a flood.



Source: (Palmino-Reganit, 2005)

Three important phases of any disasters, especially in floods are; Pre-flood, during flood and after flood. The pre- flood mechanisms typically include the preventive mechanisms to prevent potential physical loss. The example of Nandeshwar village is typical pre flood prevention mechanism. Whereas, setting up Dhani the hut which provides shelter is example of post flood mechanism. During flood coping mechanism mostly depends on the mutual association in the society. Examples of such coping mechanisms are collectively guarding the property in vicinity together to prevent loot, taking care of the children of dead of devastated family by neighbour or others (Palmino-Reganit, 2005). Mostly these traditional mechanisms are dependent on kinship and solidarity (Aicha Brahmi, Keophet Poumphone, 2002). This coping mechanism mostly depends on the organization of the society culturally and socially. Although in the organization of the Indian society women are margined in decision-making and are vulnerable, however, their contribution in resurrection is very important.

In resurrecting process the community indigenous mechanism hold importance of all resources available at the local level including human resource. The experience has proved that more involvement of women in the resurrecting process after flood have positive implication to being back life to normal. The improved gender relation and women leadership have proved to bring dramatic change and improve gender relation to

cope up with the disgrace caused by the disaster particularly in the field of restoration of livelihood. "For instance, in a recent flood in Andhra Pradesh State, communities played a major role in the rescue programme, paying special attention to children, pregnant women, old people and the disabled. In some villages in this state, communities have created village emergency funds based on household "handful-of-rice" and "kitchen-utensil" contributions" (UN/ISDR, 2007, pp. 12-19).

Effective flood responses are those that build on people's existing ways of dealing with floods and complement their coping mechanisms, resources and social capital (Provention, 2008). Inclusion of local coping mechanisms improves the success rate and efficacy of the relief and rehabilitation (ibid). Therefore, such coping mechanism needs careful attention and investigation. Within this it is also important to point out what are the mechanisms, which the community develops to cope up with the long-term effects such as psychological stress. It is important as the level of water is not the only determinant of the conditions of the lives of the devastated people, which is misunderstood by many organizations and they leave their assistance after water recedes. Whereas it could be the case in most of the time that the real misery of the flood begins after the water recedes. Ishtiaq Mayer in his paper referred to the Kashmir flood in which he mentioned that even after 10 years of Hyogo Framework of Action and Disaster Management Act 2005, there has been lack of law formulation in States Disaster Management Act. Further, there are lacunas and delays in the implementation of various programmes and infrastructural arrangements to build safe and resilient Jammu & Kashmir. He emphasised on Pre-disaster planning, citing two flaws in planning -missing/poorly implemented Land Use Policy and also failure in rescue & unprofessional provision of medical aids to the affected people. There is an urgent need to enhance the capacity of disaster prone areas to reduce the impact of disasters, through strengthened national efforts and international cooperation through technical and financial assistance for the survival, dignity, livelihood and security of the affected people. In addition to taking care of the above he advocated for strengthening Governmental manner & machinery, legislative reforms and separate budgetary allocation as cushion money for Disaster recovery & Risk Reduction (Ishtiaq Mayer, 2014).

## 2.6 Flood and Mitigation: A brief account

Mitigation of disasters of these kinds has always been the quest of the human race. Even in the present day mitigation measures taken in relation to these disasters reveal a prominence of the technical fix used by the hard science, to focus on the technical capability of providing protection. There are basically two different ways to mitigate floods, (1) Structural and (2) Non structural. Structural measures are the physical measures, which help in modifying the flood, whereas the non-structural measures are useful to modify the losses due to floods. Structural measures include reservoirs, detention basin embankments, channels, improvement flood ways and drainage systems. In a country, where a large portion of the area is flooded every year, various committees with national and foreign experts have agreed that embankments alone would not provide the required protection and felt for the requirement of multipurpose dams. In the North-Eastern region itself, embankments have been used so far as the sole answer to the flood protection. The over dependence on this particular measure is seen from the fact that out of the country's total length of embankment of 13,500 kilometers, Assam alone has 4,134 kilometers, which is about 34 percent of the country's total (Goswami, 2003).

The various non-structural measures are Watershed Management Programme, Flood Plain Zoning and Flood Forecasting. With the help of non-structural measures man can actually keep a check on the occurrence of floods and detect the warning. Watershed management programme is considered an ideal flood control programme, which includes soil conservation as well as water conservation in the upper catchment. The flood plain zoning is used to regulate the land use through zoning of the flood plains in order to restrict the damage by floods, which is a recurring problem in the country. The technique moreover is also useful to study the effectiveness of existing flood protection works, detect probable changes in the terrain condition, habitation etc. due to developmental activities in the flood plains and to adopt necessary steps to deal with the problem (Dutta et. al., 2003: 52-66). In the recent years, remote sensing technology has been found to be highly useful in flood management activities. This technique is useful in terms of floodplain zoning and mapping of the inundated and drainage congested areas. Flood forecasting is an essential means of reducing flood damage and loss of life. It leads to the evacuation of people, livestocks and other equipment with no cost other

than the shifting cost. If we consider the study area Assam, application of remote sensing technique in the study and management of flood is extremely limited.

Community participation in flood plain management provides a long-term solution against damage caused by flooding. In this regard the NGO's working there can play a crucial role in creating awareness programme among the communities to take active participation in the flood mitigating measures. For any flood plain management schemes, people should actively participate, as it is them who live and cultivate in the flood plain and also faces the hazards due to floods.

However, this approach fails to take into account the component of people's vulnerability, which is equally important while looking at disasters of this kind. The current dominant approach to disaster management practices in South Asian countries is designed in such ways that it emphasizes on institutional structures and policies that focus on emergency responses and reliefs (Ariyabandu & Wickramasinghe, 2003). They do not however; look into some of the important aspects like, as to why certain sections of the society are more vulnerable to disasters than others especially children, women and geriatrics (Nivaran, 1999; Reddy, 2013). There is not much work to understand the gendered aspects of risk and vulnerability to disasters. It is essential to incorporate the gendered perspective in developmental discourses as, women have never been considered equal in terms of decision makers or beneficiaries unlike men (Nivaran, 1999). This is because there is never any effort or emphasis being laid in this area throughout worldwide. However, a trajectory of the different policies and programmes would be useful to understand the situation of disaster management in the country since pre-independence period.

The following section of this chapter addresses issues related to policies formulated and plans in order to get an idea regarding the emergence of the Rashtriya ¬Barh Ayog (National Flood Policy) and its development in the course of flood mitigation in the most affected areas in the country in overall and Assam in particular. The next section of the chapter discusses perspectives on gender, equity and natural disasters.

## 2.7 State government policies and programmes for flood control: An overview

It is observed that the capacity to survive in the adverse situations and recovery from the difficulties is faster and easier for the economically better off population (Anderson et.al., 1989). It is not always the case that they are rich and are in a position to purchase the required living conditions but also because of their accessibility to the decision makers and also for better bargaining power for the future development activities which fits their requirement (Roy, 1999).

Hence, it is quintessential for the State to intervene and take active role in such kind of disasters. It has already been mentioned that in most of the communities only minorities are affected. In such situations it is the state, which has the capacity to provide subsidy to the affected groups of people. This intervention of the state is very essential as with most of the cases of natural disasters, especially flooding affects those who are most vulnerable. Such groups of people are those who are not in a position to compensate the financial impact of flood damages, their inability to apply or understand technical complexities and also this section of people are mostly deprived from any kind of political support to reduce their vulnerabilities. Hence flood mitigation measures can be effective by safeguarding the vulnerable at the expense of those already suffered from financial setbacks and other adverse effects of flooding (Penning-Rowsell et al, 1986). However a trajectory of programmes and policies framed for flood control measures in India since pre independence period have been discussed here.

Programmes and policies for flood control measures were found to be initiated in the pre-independent period itself. The severe flood situation of 1927 led the then British government to appoint the Orissa flood committee to investigate the nature and causes of the floods, which was probably for the first time given serious emphasis on this recurring problem of flood. It was followed by the Patna conference on flood in 1947 as flood control was a major preoccupation of the colonial state in North Bihar. As the frequent floods have resulted in the damaging of the crops, the attention of the government was forced on a number of issues related to structural measures of flood control like building of embankments and drainage systems. However after independence and with the onset of the unprecedented floods that took place in the 1953, the government was forced to introduce a number of policies to get rid of this serious problem and the first initiative was taken in the year 1954. In the month of September 1954, a comprehensive National Flood Policy entitled, 'Floods in India: Problems and Remedies' was introduced by the Government of India to protect the country from floods and eventually this was even considered a national objective. It

was in fact under the guidelines of this policy that there were allocation of duties between the central and the state flood control boards. Moreover, there are some other major steps, which were taken to prevent them from the fatalities of floods, which have been briefly discussed here. In fact a proper trajectory would allow us to understand whether there is proper efficiency and effectiveness of the different flood control measures taken over the period of last 50 years (UN-HABITAT & UNEP Reports, 2002).

# High level committee on floods, 1957

In the month of February in 1957 a high level committee on floods was set up by the government of India to develop strategies to prevent from floods. This committee mostly emphasized on the non-structural measures for the flood management like identify flood zoning areas and also flood forecast warnings. It was for the first time that this policy also suggested that flood control programme should be a part of the water resources development plan under which soil conservation should also be a part of the water resources development plan as well as flood control management (UN-HABITAT & UNEP Reports, 2002, pp. 120-38).

## Policy statement on flood-1958

Through this policy the Government of India had made many changes in the previous policy documents. In this new policy statement the Government mentioned that it is not possible for total protection of floods due to several factors. However there were changes in the different short term, medium term and long term policy measures (UN-HABITAT, 2002, p. 120).

#### Ministers committee on flood, 1964

The main objective of the policy was to assess the action taken by the Central and the State government on the National Flood Policy of 1954. The Ministers Committee on Flood however did not encourage the construction of embankments to be an effective measure of flood control. Instead they emphasized more on the non-structural measures like flood forecasting and warning and flood plain zoning, channel diversion etc. (UN-HABITAT, 2002, p. 121,)

## Working group on flood control for five year Plans

In 1977 the Central Flood Control Board felt that problem of flood could not be held separate from irrigation and water logging and recommended the Minister of the States to incorporate the issue of flood problem in the Irrigation Conference. Subsequently several resolutions were passed by the conference which includes creating a master plan for flood management and drainage improvements for all rivers in the next four years to prepare river maps to identify the flood prone areas so that it becomes convenient for forecasting of flood and flood plain zoning so that the administration can take steps to enable human activities in these areas (UN-HABITAT, 2002, p. 121)

## Rashtriya Barh Ayog, 1980

In 1976, the Government of India constituted the Rashtriya Barh Ayog (National Flood Commission) to develop a coordinated, integrated, and scientific approach to the problems of flood in India and identify the most flood affected areas for urgent actions or for preventions in the near future (UN-HABITAT, 2002, p. 121). The report was submitted in 1980 in which there were varied ranges of recommendations emphasizing on effects of development works, methods of damage assessment, identification of areas which needs urgent attention and so on. Moreover there was emphasis laid on the coordination of all institutions in both States and Central government.

## Working group for the Eighth and Ninth Five Year Plans

It was only in the 8th and 9<sup>th</sup> five year plans that the Planning Commission constituted a Working Group to draft plans for flood management in the country. However, what this working group had done was to just pick up some important recommendations from the Rashtriya Barh Ayog and suggested for its implementations (Planning Commission 1992, Planning Commission 1997).

#### Task forces appointed by the Ministry of Water Resources

In 1996, the Government of India and the Ministry of Water Resources have set up four regional task forces to review and assess the achievement and functioning of the Rashtriya Barh Ayog in the flood prone areas and based on it the respective task forces have evolved further short term and long-term flood mitigation measures.

Despite such measures and policies developed by the government not much has been done in this field. India still holds the record of being the most flood-affected areas in the world after Bangladesh. However due to inefficiencies in terms of execution of government programmes and short term construction of embankments instead of looking at how to control floods by considering the socio-economic and political conditions of the flood affected communities, it has resulted in more intense floods over the recent years.

Non-inclusion of the affected people in the decision making process, lack of awareness of the poor victims regarding information about the existing policies make the disaster management policies ineffective and unfriendly to the people (Roy, 1999). It is also noted that one of the factors contributing to the ineffectiveness of the existing relief and rehabilitation policies is the fact that in most of the cases the people involved in designing of such relief and policies are not from the local geographic region. Hence, as far as the situation of flood control and mitigation measures are concerned in the Indian context, it is found that it is still problematic. Although government has initiated many policies for flood management, they are not very successful as the main emphasis had always been on the technological and structural measures. The social aspects of flood-affected communities have always been neglected.

However, in the 1990's there been a paradigm shift in the approach of disaster management in India. A permanent and institutionalized set up began in the decade of 90's with set up of a disaster management cell under the ministry of agriculture, following the declaration of the decade of 1990 as the 'International decade for Natural Disaster Reduction' (IDNDR) by the UN General Assembly (Disaster Management in India, Government of India). Following a series of disasters in India such as Latur Earthquake (1993), Orissa cyclone (1999) and Bhuj earthquake (2001) a high powered committee was constituted for drawing up a comprehensive and holistic approach towards disasters. There was a shift in the policy from an approach of relief through financial aid to a holistic one for addressing disaster management (Disaster Management in India Report, Ministry of Home Affairs, GOI, 2011). The disaster management framework have shifted from relief and response mode and traversed into addressing the issues of early warning systems, weather forecasting and monitoring set ups and so on for various weather related hazards. This approach strongly implies that

development is not sustainable unless disaster mitigation and response is mainstreamed and inbuilt into the development process. So keeping this into consideration the Disaster Management Act 2005 addresses to make a safer and disaster resilient India.

## Disaster Management Act, 2005

It has already been mentioned that a High Powered Committee was initiated in the 1990's after a series of natural disasters in the country and Mr. J.C.Pant, the then Secretary in the Ministry of Agriculture, chaired this committee. This committee was responsible to prepare comprehensive model plans for Disaster Management at the national, state and district levels. It was after the Bhuj earthquake (Gujarat), that an All Party National Centre of Disaster Management was set up under the chairmanship of the Prime Minister and with the representatives of the national and the state level political parties for catalysing and enabling the preparation of the disaster management plans and suggesting effective mitigation mechanisms (Reddy, 2013). It was only in 2005 when the Government of India took a significant step in the way of disaster management in India and initiated the Disaster Management Act 2005. Apart from ensuring various measures from the government for prevention and mitigation of disasters, the Act also provided for setting up of the National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA) and District Disaster Management Authority (DDMA) (Min of Home Affairs, GOI, 2011). An important aspect of the Act is also that it contributes to the creation of fund for the purpose of disasters in the state and district levels. In fact it was for the first time that there was an effort from the government to engage the local bodies for intervention in the disaster management. Moreover, under its domain, there were number of executive committees and institutions which were set up in the national and state level and one of the most significant of them being the National Institute of Disaster Management The main responsibility was human resource development and (NIDM). implementation of human resource plans, capacity building, advocacy of policies in the field of disaster management (GOI, 2009). The National Disaster Response Force (NDRF), under which ten battalions comprising 144 specialized teams were trained to respond in various man-made and natural disasters. On the basis of the vulnerability profile of the country, these specially trained battalions are stationed in eight regions of the country out of which Guwahati is one of them. It is important to understand the

situation of Guwahati in this regard as the study area Barpeta district is situated around 100 kilometres from Guwahati.

The Act thus adopts a holistic approach to deal with disasters and also makes provisions for providing compensation and relief to disaster victims without discrimination. However, it does contain certain loopholes – the definition of disaster excludes crises that cause immense loss to life and property such as famines and epidemic diseases. Another flaw relates to the considerable reliance that it pays to administrative participation but little attention is paid to community participation. The success achieved by the polio eradication programme in India, which relied extensively on community participation, should serve as an example to the current legislation. The concepts of justice, equality, liberty and fraternity should be used while dealing with vulnerable populations that are at the threshold of disasters.

In terms of fund for disaster mitigation measures, the ministry of home affairs under the Government of India has approved various schemes to strengthen the existing institutions, improve response mechanism, build capacities and mitigate impact of disasters in India (GOI, 2009). Another important institution, which is crucial in terms of crisis prevention and recovery, is UNDP. Since 1993, UNDP has been supporting the Government of India in strengthening disaster management to reduce and respond to risk and also in terms of building community preparedness to risk. The UNDP in partnership with the Ministry of Home Affairs, it has also supported the implementation of the Disaster Risk Reduction Programme across 176 multi-hazards prone districts in 17 states of the country between the period of 2002 and 2009. Moreover the arrangements made by the national policy for meeting the relief expenditure relating to natural disasters have been done on keeping in mind the suggestions of the Finance Commission (Reddy, 2013). Before the twelfth finance commission, the earlier finance commissions were responsible to look into the relief and rehabilitation during disaster. It was only since the twelfth finance commission, that there is a shift in the allocation of funding and they are mandated to look at the requirements for mitigation and prevention along with relief and rehabilitation (GOI, 2011). In the Memorandum which was sent to the Commission, it was proposed that a fund of Rupees 10,000 crores have been allotted for Disaster Mitigation Fund and this would support to meet the various expenses related to disaster management by the different states.

## 2.8 Flood and Society

In Indian context the public sphere is occupied with layers of hierarchies of caste, class, religion and culture often at odds with each other. In such a case where the society is multi-layered, hierarchical, characterized by diversity and pluralism, where contesting claims of political and socio-cultural interests are operating together, there is always the question of inclusion or exclusion of deprived section. In such a stratified society where power operates to determine the access to basic resources, the social positioning of individuals often play an important role in terms of their access to health care. Most of the time those who are located in the lower ladder of the social hierarchy are excluded from accessing the services meant for everyone, with their social positioning acting as barrier to access health services. Although disaster brings agonies to the rich and the poor alike there are certain vulnerable sections in the society who are affected more. The social position and importance of different ethnic groups, caste and gender groups in society determine their access to resources, support and services. Even the government policies, political and economic set up of the society also favours the economically better offs.

It is seen that responses to control the flood situation are mostly restricted to issues related to food and control of epidemic. The most neglected issue in the whole context is provision of toilets in this situation. Literature also reflects that women have always played a very important role as managers of water and environmental health. Again, it is mainly women and children who are most vulnerable in terms of water and environmental health problems. Women in such conditions compromise with social life and subjugate to undignified living conditions. Shame and ignominy becomes part of daily life experience. It is this neglected area which needs more policy attention, and especially for those women who have limited mobility such as pregnant and geriatric.

Again disaster management laws in India have not been able to address the specific needs of women who are agriculturally dependent in the rural areas of India. Their whole livelihood depends and revolves around the land and agriculture, which is lost in disasters. When disaster strikes, agriculture is the worst hit sector of the economy. Natural disasters of all kinds like floods, earthquake, drought or hurricane deplete the soil of its top most alluvium layer of the soil. It directly affects the fertility of the soil. It causes poverty, unemployment and ultimately results into large-scale migration of

males towards urban areas. Apart from destroying the fertility of the land, disasters also destroy the livestock, households and the whole infrastructure of the village. When men are away in search of employment, women are left behind to take care of the destroyed households. Most disasters place an undue burden on women and girls who are responsible for unpaid work such as providing care, water and food for households exposing them from severe environmental hazards. With the recurring flood and the large amount of devastation with greater impacts on the most deprived and the weaker sections in the society there is an urgent need of engendering the disaster laws in India. Even though women are worst hit we don't find the women or gender clause in either municipal or International Disaster Laws. The way forward is to be based on the capability approach by giving right in land to women, support till soil regains fertility, better compensation, prevention and mitigation.

## 2.9 Women and natural disasters: A theoretical framework

The understanding of social construction of gender is significant in this study as the two sexes experience disaster in different intensities. In any disaster, if analyzed closely the vulnerability of men and women with respect to their capacities and options available to them during disasters differ in character and scale according to their gender (Ariyabandu & Wickramasinghe, 2003). However, it is also essential to note that although women are more vulnerable than men during disasters, they are not really those weak and helpless victims as they are often portrayed. They have knowledge about indigenous coping mechanisms, which can be used during disasters. But unfortunately these capabilities of women are often ignored in policy decisions and in mitigation measures and as a result of which these qualities go waste (ibid). Insensitivity and ignorance of gender differences has resulted in constraining women from taking part in mitigation and relief work. Again in development planning and different mitigation measures, interventions are mostly aimed at men. So eventually such inaccurate gender assumptions of policy makers tend to not only deny women benefits, but also create pathetic condition for women (Ibid).

Often gender based inequalities interact with class, race, ethnicity and age which put many women and girls into high risk and it leads to other sets of inequalities with respect to enjoyment of human rights, political and economic rights, land ownership, exposure to violence, education and health (particularly sexual and reproductive health), and consequently this makes women more vulnerable during and after disasters (ibid). Again older women, women who are physically challenged, pregnant women and mothers of small children are at greater risks during emergencies as their mobility becomes difficult and also lack of knowledge prevents them from escaping and subsequently they are left behind amidst flood. However, one of the most important factors, which contribute to the risks and agonies of women, is the prevailing high rates of female poverty. It is very essential to understand this social aspect of poverty, as this particular factor is responsible for all kind of social vulnerabilities.

As far as coping with the disaster is concerned men, women and community as a whole provide emergency assistance to one another, by helping the children and the elderly. Community is the first responder before any external assistance and help, community take charge and helps each other. However, there are research studies which show that at the time of emergency or the occurrence of natural disasters, women are the first one to provide nursing to the family before any kind of relief work begins (ITDG South Asia Research Studies, 2001). Apart from providing care they are also responsible for providing safe drinking water and food to the family, which is a seriously difficult task during such situations. The researchers have mentioned one of the studies by Nasreen (Nasreen, 2000), which reflect the plight of women during one of such disaster struck situations. The study is cited in Ariyabandu and Wickramasinghe's work on gender dimensions in disaster management. This study is based in Jolpur, Bangladesh where women were responsible for collecting and storing water during the floods. 'Almost all tube wells went under water and poor women had to take considerable risks to procure drinking water from great distances. They had to walk through chest high water or swim to collect fresh and clean water'. Women used various techniques to take water out of the tube wells so as not to mix it with flood water, and to purify the water, in the absence of fuel wood (Nasreen, 2000: 316 cited in Ariyabandu and Wickramasinghe 2003). This study is only one of the several events in which women faces grave situations under the effect of nature's wrath. Under such situation in which most of the emphasis is applied on the meteorological and technological research a detailed gender studies also becomes necessary to understand the status of men and women in the society in daily life and also during disasters. Such studies are useful to understand the gender based vulnerabilities that are prevalent in the society and these studies are also

be useful in the equitable framework of policies and planning with respect to disaster management.

Although disaster research and feminist theories are two different areas, which have evolved, independently in different periods, however, in the recent times many scholars have penned down different feminist perspectives with regard to disaster research. Elaine Enarson and B. Phillips in one of their research work cited that, "Feminist scholarship demonstrates that gender serves as a primary organizing principle of all societies and is therefore an essential lens through which to view the experience of a disaster such as a hurricane; disaster research suggests both vulnerability and capacity for women experiencing disaster" (Enarson & Phillips, 2008: 41-74).

Disaster research always refers women as more vulnerable to men during disasters. According to the traditional norms of life, the socially constructed gender roles place women as homemakers, bearer of children and nurturer and men primarily holds the position of a protector and the breadwinner whose prime responsibilities place him as the supporter of his family. Lately with some development in this research area, it is observed that role-conditioned gender differences occur at all stages of disaster response (Hoffman and Susanna, 1998). Bateman & Bob Edwards in their work on gender and evacuation in 2002 expressed that, "Women's and men's ideas about their work and family responsibilities have major consequences for their risk perception, preparedness and evacuation" (Bateman, Julie M & Bob Edwards, 2002: 107-117). Many times women as a caretaker are at a higher risk of injuries as they give more emphasis on the safety of the other members of the family specially her children at the time when emergency struck.

As already expressed earlier that women are more vulnerable than men, however their vulnerability is not only a result of their responsibilities as a caretaker but also from lack of working opportunities which results in lesser earning capacities, lack of access to transportation, lack of mobilization from one place to another and other essential resources like proper housing and health care facilities. Consequently they are not considered as an important entity in terms of decision-making. Again disasters like flood do not affect all women in equal intensities. In this context it is essential to understand the theoretical aspects of social stratification for a broader understanding. Increasingly, disaster research reveals that differences of ethnicity/race, class status

have contributed significantly in the course of women's experiences during disasters, and women who are socially and economically disadvantaged are most vulnerable to long term impacts. In fact Enarson and Phillips in their work in 2008 mentioned that, disaster theory, as well as disaster preparation and recovery policies, often assumes nuclear family structure which posits male protection, and privileges male headed households for relief aid and the reintegration of men into the workforce. As a consequence, women-headed family and non-family households do not always receive the needed assistance and services to which they are entitled (Enarson & Phillips, 2008).

From the last one-decade, various debates around gender and environment have made the relationship between environment and gender evident. Literature shows that women's work is linked with the environment through different activities like agriculture, domestic chores and so on and the situation generally becomes very difficult whenever there is environmental degradation. Susan Buckingham-Hatfield in her work Gender and Environment states that, "The relationship between gender and environment is less obvious in the West where most people are more distant from the source of their food supply, the energy and the water they use. However because of their biology, it is women who conceive, carry, give birth to and suckle children and this exposes them to a number of environmental hazards, whether it is by shopping for food (women need to be aware of whether this food has been sprayed by harmful pesticides, irradiated for preservation or genetically modified) preparing that food for safe eating, or caring for the health of their children" (Buckingham-Hatfield, 2000:1)<sup>3</sup>...

Though there are differences between women in different parts of the world, there also exist inequalities in terms of income and occupation between men and women. Ironically, women are engaged in such activities which are very critical to the survival of humans which include feeding or providing health care and so on which are apparently not considered as productive work in the society nor do they receive any respect for such activities. It is evident that poverty is one of the most important determinants of ill health and also environmental degradation, which results in the poor health of the women.

<sup>&</sup>lt;sup>3</sup> Cited in Panchi Pathak's Unpublished M.Phil dissertation submitted in Centre of Social Medicine and Community Health, School of Social Sciences, JNU: New Delhi, 2011.

Also the issues of ecological and cultural crisis have always had a big impact on women than on men. Dietrich's work on Women, Ecology and Culture raised the argument that both ecology and culture have direct implications for the lives of the women. The environmental degradation adds to the suffering of women and the cultural dimension has a significant role in defining the intensity of their sufferings. Moreover, Agarwal (1999) in her paper "The Gender and Environment Debate Lessons from India" draws some of the important points which seemed to be problematic in the context of the whole discourse of eco-feminism and has highlighted the following issues: "First, it posits 'woman' as a unitary category and fails to differentiate among women by class, race, ethnicity, and so on. It thus ignores the forms of domination other than gender which also impinge critically on women's position. Second, it locates the domination of women and of nature almost solely in ideology, neglecting the material sources of this dominance (based on economic advantage and political power). Third, even in the realm of ideological constructs, it says little (with the exception of Merchant's analysis) about the social, economic and political structures within which these constructs are produced and transformed. Nor does it address the central issue of the means by which certain dominant groups (predicted on gender, class etc) are able to bring about ideological shifts in their own favour and how such shifts get entrenched. Fourth, the eco-feminist argument does not take into account women's lived material relationship with nature, as opposed to what others or they themselves might conceive that relationship to be. Fifth, those strands of eco-feminism that trace the connection between women and nature to biology may be seen adhering to a form of essentialism (some notion of a female 'essence' which is unchangeable and irreducible). Such a formulation flies in the face of wide-ranging evidence that concepts of nature, culture, gender, and so on, are historically and socially constructed and vary across and within cultures and time periods" (Agarwal, 1999:122)<sup>4</sup>

As it is a culturally and historically variable, gender relation on balance create social conditions which leave millions of women around the globe in substandard housing, socially marginalized, impoverished or economically insecure, overburdened with care giving responsibilities, and lacking social power and political voice. Moreover male dominance in disaster decisions and ideological constraints can limit women's access to

<sup>&</sup>lt;sup>4</sup> Cited in Panchi Pathak's Unpublished M.Phil dissertation submitted in Centre of Social Medicine and Community Health, School of Social Sciences, JNU: New Delhi, 2011.

life saving public shelters. Hence gender issues are not manifestations of disasterrelated crisis situations, but have been always visibly prevalent in the daily life at the level of the individual, family, community and is reflected everywhere in terms of social and cultural norms. Gender relations in the society are reflected through gendered identities, which separate boys from girls, men from women, which is also responsible for the different perceptions, roles and status. It is important to mention that men and women belonging to different age groups have distinct experiences resulting from the existing gendered identities and responsibilities. This is a very important aspect to understand gender-based differences in disaster impact, response and recovery (Ariyabandu, Madhavi Malalgoda, 2009). It has been repeatedly mentioned and documented in the course of the study that women belonging to different social classes, caste groups and age groups are more vulnerable than their male counterparts of the same social group, whether it is before or after any kind of disaster struck. It should also be kept in mind that even though women are considered more vulnerable during disasters than men owing to social relations and typical gender responsibilities; they cannot be just referred as helpless victims. With time and experience they gather knowledge about traditional coping mechanisms with disasters and also how to take care and nurture the children even at the time of such crisis. Say conventionally or characteristically they are the ones who are responsible for fetching water even in disaster like situation.

Despite of this in larger context like in necessary planning organisations it is seen that women are scarcely represented and they are excluded from any kind of decision-making positions. Although this kind of characteristic is prevalent in both developed and developing countries, it is much more prevalent in the developing countries owing to the gendered identities and norms set up by the society (Enarson and Morrow, 1998). As a result of which it leads to wastage of valuable human resources and even more ignites the already existing socially and economically relationships. Although there have been constant emphasis on gender approach in disaster risk reduction, yet it is not yet successful in bridging the gap between men and women in disaster risk reduction as long as gender relations are part of the social and cultural context that shape a community's ability to anticipate, prepare for or survive the disaster. Even the United Nation's International Strategy for Disaster Management (ISDR) in 2000 stressed on gender equality in disaster reduction policies and also measures to involve women in

more leadership and decision making roles. In rare cases loss of women's workspaces and supplies during flood or other natural disaster could have serious repercussions for their economy. However they are rarely documented and in most of the circumstances they are hardly able to compensate their losses even after many years (Ariyabandu, 2009).

## 2.10 Conceptual Framework

Current literature on gender and disaster thus reflect that women are the greatest sufferers in such adversities and disasters, especially during flood in case of the study area which is Assam. Though, the situation becomes unbearable for all, but especially for women and children, as are most often resource less, lack bargaining power and are dependent on male members. Recurrent floods push the communities to perpetual poverty and every year they are barely able to come out of the cycle of poverty. Apart from the economic losses, the community faces other problems, for women, they find it difficult to even find places for toilet. The social norms build around the gender add to the difficulties of the women. Primary reason of vulnerability although is poverty it has many faces such as low level of education, unemployment, gender and ignorance about the entitlements. In normal course of life it is difficult to survive any disaster in the form of disease or death can appear any time. While during the flood the vulnerability conditions intensify for women. There are various factors, which intensifies these vulnerabilities. Primary among them is loss of wage that puts in economy of the household in jeopardize. While organizing the life in flood situation the women struggle to arrange basic necessities for the families. The most difficult task is to organize fuel for cooking, carrying water for drinking and place for defecation. Being a woman and bearer of responsibility for the household chores there is no escape from the struggle. To arrange these the women has to walk through floodwater and would expose herself to the risk of swept away by the current of the water, snake bites. Not only has this but the prices of such commodities gone higher during the flood time leading to exploitation of poor, but in absence of any choice there is no other option than to get exploited. The flood brings vulnerabilities posing economic and life threats. Being a woman it is apparent to get pregnant which is the best endowment by the nature to human kind but it becomes a curse if the woman is pregnant and is supposed to deliver while the flood occurs. The women become a liability for the family and there are grim chances of survival of the child.

In order to gain a better understanding of the condition of women during and after flood situations, in terms of the views and experiences of women themselves, a pilot study was carried out in Majkuchi village of Barpeta. Four group discussions were conducted as part of the pilot study in which two sections of women prominently came out as helpless to be extremely vulnerable. Even though women per se are vulnerable, woman who are pregnant and about to deliver during flood situation and the other geriatric (older) women are even more vulnerable.

The researcher has tried to conceptualize the literature review in this context through an excerpt from her primary data to throw some light on the gravity of the situation. In a group discussion, daughter –in- law of an elderly women of 80 year old, blind and half deaf who lives alone in the house adjacent to her family was trapped for two days alone without food and water, described;

"She was in a desperate situation but we could not do anything immediately as it was already late night when it started pouring heavily and within no time water was everywhere. She could not even move from her place to go to toilet. We were also helpless as we could not provide her safety and food, nor did the neighbours come for rescue at that time. It was only when the water subsided a bit, my son carried her to our house and only then she was provided tea and some food".

There are several cases where as expressed by women, who have no choice, but lose sense of shy and self-respect under such situations, where they have hardly any space to set foot anywhere but to live and defecate inside their respective houses and later throw the excreta outside. The situation of drinking water is worst and also scarcity of fuel. Sometime water is boiled and sometimes use without boiling.

A young girl of around 20-21 years old shared some of her experiences during pregnancy and the flood situation;

"I would feel hungry and thirsty most of the time. My mother-in law would serve me whatever food was left. Sometimes when the water subsides a bit, she would go to the neighbour's place to ask for some food and sometimes, we would sustain only by having

tea and biscuits. However, the most difficult part was going for defecation in such a situation. Initially, I found it embarrassing to defecate in a steel utensil and later my husband would throw it outside but gradually I became used to it as there was no choice left for all of us but to manage that way for some fifteen days".

Thus, floods or any disaster-affected areas can cause real havoc in terms of accessing basic services and lead to grave situation for water and sanitation. In such devastating conditions, situation of health services also gets dismal. A woman in the village delivered on an elevated platform supported by bricks. Invisible roads socked in the water and expensive boat ride does not allow people to reach to health facility. Due to the deficiency of medicines, ANM refused to attend the patients who cannot pay her extra money.

Given this kind of scenario, the researcher conducted a study on the implications of flood in the rural areas of Barpeta district in Assam.

#### **CHAPTER THREE**

## Socio Economic Profile of The Research Area

#### 3.1 Introduction

Assam, one of the larger states of North-East India, is a land of hills and rivers. The state lies between 26.2006043 latitude and 92.9375739 longitude (www.mapofindia.com). The mighty Brahmaputra runs through the state which passes through Assam from one end of the state which is Sadia in the north-eastern part till Dhubri in the western part. The state covers 2.39 percent of the total area of the country. The state holds its importance in India through its history, geography and natural resources. It holds an important strategic political position. Assam is surrounded by two foreign countries, Bangladesh and Bhutan and the seven Indian states, West Bengal, Arunachal Pradesh, Nagaland, Manipur, Meghalaya, Mizoram and Tripura. It is noteworthy that the North-East India stands as a transitional zone between South Asia and South-East Asia. The three sides of the state which is the northern, eastern and southern parts are surrounded by hills and mountains and the western part merges with the plains of West Bengal and Bangladesh. Assam is known for its diverse sociocultural patterns and diversities in the flora and fauna.

Total population of the state is 31,169,272 including 15,954,927 male and 15,214,345 female with sex ratio of 954 female per 1000 male which is much better compared to all India figure of 940 (census 2011). Density of the population in Assam has increased to 397 persons per Sq. Km in 2011 from 340 persons per Sq. Km in 2001. Assam is growing in its population with decadal population growth of 16.93 percent. The total of 78438 Sq. Km. Area is divided in 27 districts. Guwahati is the largest city in the state which is situated under the Kamrup district. The state has seen drastic rise in population growth, which could be due to immigration that is taking place over the years.

The present study was conducted in the Barpeta district of Assam. Barpeta District lies between 90  $^{0}$  40' to 91 $^{0}$  20' East longitude and 26  $^{0}$ 15' to 27  $^{0}$  05' North latitude. The district is surrounded by river Brahmaputra in the south, Nalbari district in the east, the

hills of Bhutan towards the north and Bongaigaon and Kokrajhar districts in the west. An important feature about the geography of the district is that its central and southern parts are very flood prone due to heavy rainfall every year. Total area of the district is about 3245 square kilometres, out of which nearly 3212.67 square kilometres are in rural areas. Urban areas consist of only 32.33 square kilometres. The total population of the district is 1,693,190, which is 5.4 percent of the total population of the state (Census 2011). Since 1991, there is a rise of 18.87 % of the total population as against 18.97% (Statistical Handbook of Assam, 2006) in the state level.

The present study is the result of the field work conducted by the researcher during different flood events that affected the population of the Barpeta district in Assam. Special emphasis have been laid on the flood events which took place in the year 2012, 2014 and 2015. The researcher have visited the universe of study before the onset of the flood and immediately after the occurrence of the flood. It is important to mention that the survey was conducted during non-flood season to maintain consistency in data collection. The flood which occurred in 2012 was immense in nature and it had caused major destruction in many parts of the state. The three waves of flood which took place in that year touched upon almost all the districts including Barpeta. The total area affected was 161052 hectares of land and 686 villages were badly hit affecting a population of 11, 99756 approximately with 36 casualties reported see Table 3.1.

Table 3.1 Extent of Damage Due to Flood in the Year 2012 in Barpeta District

Sl.	Item	Details	
No.			
1	Total area affected	161052 hectares of	
		land (approx.)	
2	Agriculture land	1,34,210 hectares of	
		land	
3	Non-agricultural land	26,842 hectares of	
		land	
4	Total villages affected	686	

5	Total population affected	11,99756
6	Total human lives lost	36
	Male	23
	Female	13
7	Livestock and Poultry affected	425732 nos
	Poultry affected	230344 nos
	Livestock affected	195267 nos
	Animal lost	71 nos
	Poultry lost	50 nos
8	Damage to infrastructure	13 nos
	Water Resources (Breach gap)	775 nos
	PWD Rural road	24 nos
	PWD State road	2800 hectares
	Fishery	Fully-12508
	Under Revenue Circles (Houses)	Severely-3521
		Partially-28891

Sources: Flood damage report of 2015 by District Disaster Management Authority Office, Barpeta Assam

Most of the roads and embankments had been breached or overtopped at various places with the worst being the Brahmaputra dyke at Pazarbhanga village, which had caused irreversible damage to the village. The other embankments, which were destroyed by the floodwater were DRDA Embankment at 4 no. Bordoloni Satrakanara under Baghbar circle, Embankments of Tihu and Kaldia rivers under Sarthebari circle and Bundh of Deojara river at Patacharkuchi. In brief the destruction of these embankments had caused massive turmoil in the lives of the people living in the surrounding areas. Most of the roads including the State Highway, PWD roads both rural and urban were affected by the incessant rains either being inundated or waterlogged causing communication disruption and obstruction in relief and rescue operations. Moreover, it was the third wave of flood, which resulted in the disruption of roads and

transportation. As it is the water did not dry up after the two waves of flood, the third wave of flood was a big blow to the people as it increased the water level beyond the danger point. Inefficiency and inadequacy in context to relief providers had also caused a big blow to the people who had lost everything that they own. Whatever feeble effort the different agencies have made was not sufficient to compensate or even pay a fragment of what the people in these villages have lost due to the raging flood which swept away the sole belongings and savings of many households. Flood damage report of 2012, reflects upon some of rescue and relief operations which suggest major inadequacy in terms of number of people being covered as compared to number of people actually affected. As per the flood damage report of the devastating flood of 2012, around 83731 people were evacuated from the flood-hit areas. Even though the NDRF and SDRF could evacuate a considerable number of population and move them to safe places, yet the number of people being evacuated is disturbingly less as compared to the total number of people who are affected.

The district of Barpeta did not experience any major flood problem in 2013. Even though, the state has experienced some flood situation in certain parts, Barpeta was refrained from the flood threat. However, in 2014 the water level of the major rivers surrounding the district and the nearby areas crossed the safe line and hit most of the villages in the district causing havoc once again. As per the data based on the extend of damage by the flood in both the years 2012 and 2014 the impact was less than the disaster in terms of economic physical destruction and the lives lost, which took place in 2012, but it had a much deeper repercussions on the lives of the people. The effect of flood in 2012 was such that it left an irreversible impact on people's lives. The raging flood flowed away every assets and belongings of these poor and marginalized villagers. The people were still trying to bring back normalcy into their lives that another flood dismantled all their efforts and with this they lost their last ray of hope. More than six lakh population suffered in 391 villages covering an area of approximately 75, 567, 25 hectares of land (see Table 3.2 for complete data).

Table 3.2 Extent of damage due to flood in the year 2014 in Barpeta district

S.No.	Item	Details
1	Total number of districts in the State	32
2	Names of districts affected	Barpeta
3	Number of villages affected	391 nos.
4	Population affected (in lakhs)	6,38,370 nos.
5	Total land area affected (in lakh ha)	75,567.25 ha.
6	Cropped area affected (in lakh ha):	
	(i) Total cropped area affected	35969 ha
	(ii)Estimated loss to crops (Rs.in lakh)	11,99,18,000.00
	(iii)Area where cropped damage was more than 50%	25178 ha.
7	Percentage of area held by SMF:	
	(i)In the State as a whole	Does not arise
	(ii)In the affected districts	68 %
8.	Houses damaged:-	
	(a)No.of houses damaged:-	
	(i)Fully damaged pucca houses	Nil
	(ii)Fully damaged kutcha houses	20 nos.
	(iii)Severely damaged Pucca houses	Nil
	(iv)Severely damaged kutcha houses	2010 nos.
	(v)Partly damaged houses (pucca+kutcha)	40 nos.
	(vi)No. of huts damaged	Nil
	(b)Estimated value of damage to houses (Rs.inlakh)	68,08,000.00
9.	No. of human lives lost	8 nos.
10.	No. of persons with grievous injuries	Nil
11.	No. of persons with minor injuries	Nil
12.	Animals lost:-	
	(a)No. of big animals lost	131
	(b)No. of small animals lost	102
	(c)No. of Poultry(birds)lost	NIL
13.	Damage to public properties:-	PWD (St. R)-10
	(a)In physical terms (sector wise details should be given-e.g.	PWD (RR)- 195
	length of State roads damaged, length of district roads damaged,	Water
	length of village roads damaged, No. of bridges damaged, No .of	Resource- 5
	culverts damaged, No. of school buildings damaged etc.)	PHE- 31
		Irrigation- 4
1.4	(b)Estimated value of the damage to public properties	74,44,08,000.00
14.	Estimated total damage to houses, crops and public properties.	87,11,34,000.00

Source: Flood Damage Report of 2012 by District Disaster Management Authority Office, Barpeta Assam

The impact on people's houses, agricultural land and cattle was beyond comprehension. There were many respondents who claimed that they had reconstructed their houses under difficult financial situation. So when in 2014 during the monsoon season the water level started to rise it had already created panic stricken situation among the people. Consequently there was a flood situation in many parts of the state including Barpeta district. Since the geographical condition of the district is such that the impact is more than many of the other places. So whatever money or savings that they have, went under the water leaving them under total chaos and distress.

The subsequent flood in the following year have further worsen the already devastated areas. It was observed that in the government data the percentage of destruction or the area affected under the influence of flood was less as compared to the previous years. As per the data of District Disaster Management Authority 393 villages were affected. Total population hit was approximately 2.68 lakh which is comparably less than the previous waves of flood (see Table 3.3). However it is essential to observe that although the population affected is less as compared to the previous years, it is difficult to comprehend the intensity of actual suffering of the people suffering from recurrent floods. In the following section a detailed socio-economic profile of the study areas is discussed as the researcher felt it would give an insight to which are the main factors that stands as major hurdle in coping with the disaster situation.

Table 3.3 Extend of damage due to flood in the year 2015 in Barpeta district

Sl. No.	Item	Details
1.	Number and names of districts affected	Barpeta
2.	Number of villages affected	393 nos.
3.	Population affected (in lakh)	2.68
4.	Cropped area affected (in lakh ha):	0.44
	(i) Total cropped area affected	0.44
	(ii) Estimated loss to crops (Rs.in lakh)	2678.04
	(iii) Area where cropped damage was more than 33%	0.39
5.	Houses damaged:-	
	(a) No. of houses damaged:-	1002

(i) Fully damaged pucca houses Nil	
(ii) Fully damaged kutcha houses 60 nos.	
(iii) Severely damaged Pucca Nil houses	
(iv) Severely damaged kutcha Nil houses	
(v) Partly damaged houses (pucca + 942 nos. (Kutch kutcha)	na)
(vi) No. of huts damaged Nil	
(b) Estimated value of damage to 87.20 houses (Rs. in lakh)	
6. No. of human lives lost 1 no.	
7. No. of persons with grievous Nil injuries	
8. No. of persons with minor injuries Nil	
9. Animals lost:- Nil	
(a)No. of big animals lost Nil	
(b)No. of small animals lost Nil	
(c)No. of Poultry(birds)lost Nil	
10. Damage to public properties:- Rural Roads- 120	0.02
(a) In physical terms (sector wise km	
details should be given—e.g. length Bridge- 5 nos	•
of State roads damaged, length of Culvert-10	
district roads damaged, length of village roads damaged, No. of	.90
hridges damaged No. of culverts	
damaged, No. of school buildings  Embankment- 24  km	1.61
damaged etc.)  School-1013 no	20
Anganwadi Cent	
Aligaliwadi Celit	105-
(b) Estimated value of the damage 2846.89 to public properties	
11. Estimated total damage to houses, crops and public properties. 5612.13	
12. Estimated value of food & other essential items 572.89	
13. Total (11+12) 6185.02	

Sources: Flood damage Report of 2014 by District Disaster Management Authority Office, Barpeta Assam

### 3.2 Profile of the study areas

The study areas Majkuchi, Nashatra and Pazarbhanga are part of Barpeta district. The villages Majkuchi and Nashatra are situated approximately 6-7 kilometres from the Barpeta town. Situated near the river 'Nakhanda', these two villages are easily accessible from other parts of the district from Patbousi village which is the centre point of the entire Gaon Panchayat (GP). These two villages also cater as an important pilgrimage destination for the followers of Vaishnavism. The Sankardeva Satra in Patbousi, Damodar deva Satra in Majkuchi and another Satra believed to be set up by the Vaishnavite religious leader Sankardeva in Nashatra village experience many tourists coming from different parts of the district as well as people from other part of Assam in large numbers every year. Even though many people visit this places every year it has not been able to boost the economic condition of these villages as there is no provision of lodging and decent food places like the 'cyclone shelters built in Orissa, Andhra and Sunderbans etc., kind of evacuation center, which would attract people from distant places to spend more time and spend night. The state as well as the local government have not made any effort for any kind of development of these tourist destinations. The third village Pazarbhanga is a Muslim dominated village. Unlike the other two villages, the ancestors of many households in this village are originally migrated from other places including Bangladesh. It is significant to understand the entire belt in which Pazarbhanga as well as some other villages like Bohori, Sila are located as all these villages are mostly Muslim dominated and are situated very close to river Brahmaputra flowing in to Bangladesh. The mode of transport is river and many boats could be seen sailing through the borders. The culture of the area is similar to the culture beyond the border in Bangladesh and there are business ties among the communities. People seldom seen trespassing the border in search of livelihood. The river border is not heavily guarded and is porous which makes it easy for the migrants from other places to enter through river ways according to the locals. Many natives in the interview pointed that Bangladeshi Migrants settle in Barpeta district and other surrounding districts like Dhubri and Kokrajhar. However it is to be noted that although there are some households whose ancestors were Bangladesi migrants they had settled in Pazarbhanga decades back and apart from certain linguistic variations, there is not much of cultural differences among different households. This village is

situated nearly 16 kilometres from the Barpeta town. The location of the village is such that it is accessible from other GP's.

### Village Majkuchi

The village Majkuchi got the recognition of a revenue village in the year 2004-05. Geographically the village Majkuchi is situated in the centre of Patbousi Gaon Panchayat in the Barpeta district of Assam. Three different hamlets namely Majkuchi, Gosaigaon and Namakha has constituted to become one larger village namely Majkuchi. It is situated near the river 'Nakhanda'. As the area receives heavy rainfall every year, some of the villages which are situated in the low lying areas are immediately affected and cause emergency situation as a result of which there is immense loss incurred by the villagers. It is essential to keep in mind the geographical condition of the village as it has significant implication in almost every aspect of the people's lives. Due to its fragile geographical location, Majkuchi is prone to flood. Total number of households in Majkuchi are 235, in which both Majkuchi and Gosaigaon together have 135 households and Namakha has 100 households (Survey conducted by researcher in 2011)

### Village Nashatra

The second village Nashatra is a revenue village of 77 households situated on the bank of river 'Nakhanda'. This village is also situated under the Patbousi Gaon Panchayat. The geographical condition of the village suggest the fragility of the area. Being situated in the low lying area this village is very flood prone. The researcher observed that of all the villages under the Patbousi Gaon Panchayat, Nashatra is the most under developed be in terms of connectivity by road or any other means of transport, even though it is an important centre for the followers of Vaishnavism. However, not many pilgrims from other parts of the state visits the satra, which is one of the most important shrine for the followers of the Vaishnavism sect of Hindu religion. The road which leads to the Satra does not allow cars and other big vehicles as most of the time the roads are in a dilapidated condition resulting from the frequent flood which takes place in the village and its surrounding areas. Majority of the population in the village is schedule caste belonging to lower strata of the social order with very limited means for subsistence and majority of them surviving on manual labour. The recurrent flood in the

area has a big implication on the lives of the people and the poor economic conditions and lack of basic infrastructure facility has caused permanent wound in the lives of the people.

### Village Pazarbhanga

Situated on the embankment of river Brahmaputra, the third village Pazarbhanga under Gumafulbari block is one of the most flood prone villages of the district. Recurrent flood and erosion have forced many households to relocate to other villages or the surrounding areas. According to 2011 census the total number of households in the Pazarbhanga village was more than 200 but due to the heavy floods, which took place in the year 2012 have washed away many households and large acres of land have been submerged under the river resulting in the relocation of substantial amount of population to other areas. When the researcher visited the study area it was found that the actual land, where the village Pazarbhanga was situated have been submerged under the river Brahmaputra. The population who resided near the river areas have either shifted away from that place and have settled in the embankment area or other villages. A portion of them have scattered around Belortari and Dakreshwar villages in the same Gamafulbari block. When the census was conducted a total number of 131 households from the original Pazarbhanga village were found to be staying at the embankment and the nearby villages. So the researcher with the help of local people and key informants have tried to locate every households belonging to the Pazarbhanga village and with the help of a ward member have conducted intense research in different times of the year. Unlike the other two villages, which are dominated by Hindu households, Pazarbhanga is a Muslim dominated village. Total households are followers of Muslim faith, where the primary language of communication is Bengali. There are two types of Bengali dialects spoken in the village, where one is Indian and the other is Bangladeshi. The families speaking Bangladeshi dialect attribute it to their ancestors migrated from Bangladesh long ago.

### 3.3 Socio-demographic profile of the villages

Majkuchi among the three villages under study is biggest with 235 households and population of 1139 followed by Pazarbhanga with 131 households and population of 603 (Survey of the three villages was conducted by the researcher between the period

2011 to 2013). The Nashatra is small compare to other two villages with 77 households and population of 373. Total population of the study area is 2115, including 52 percent male and 48 percent female, which is comparable to 51.2 percent and 49.8 percent of male and female population respectively in the Barpeta district. The differences in the sex ratio between the three villages shows that both Majkuchi and Nashatra has a similar pattern almost 50 percent of female, whereas the female population in the Pazarbhanga village is 43 percent, significantly low compared to other two villages. The researcher in the course of collection of data observed that the socio-economic and cultural aspects of Pazarbhanga village are significantly different from the other two villages and that cannot be discounted while understanding the sex ratio in the area. Total population of Pazarbhanga belongs to Muslim community and all categorized under OBC group while in other two villages the population belongs to Hindus within which there is stratification by different caste groups.

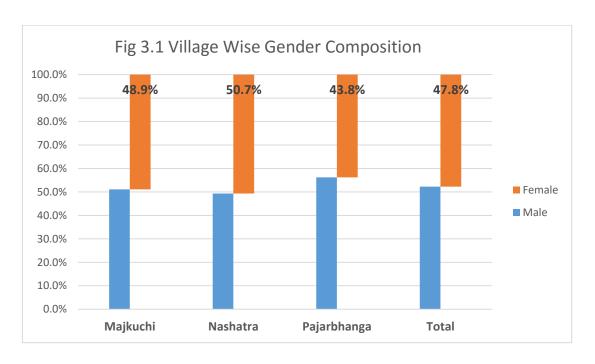


Fig 3.1 Village Wise Gender Composition

Source: Primary data collected from the period 2011-2013

Nashatra village which is total Schedule caste population has more number of females than male. In the three villages combine although, the male population is dominating. Pajarbhanga the Muslim dominated village has more male compare to the other two villages. Generally the male from this village goes out to do daily wage labour work to big towns such as Barpeta and Guwahati comparatively in the other two villages the male prefer to find work nearby. Majkuchi village where the population is comparatively better off and have better education status has better male female ratio. However it is observed that this proportion of gender in changing rapidly and the female proportion is dropping down in the younger age group. The reasons as such are not known but could be attributed to gender biased in the society and general neglect of the female child.

Table 3.5, shows that while in the age group below 6 years of age, the proportion of females decreases to 40 percent in the village Majkuchi, whereas in Nashatra it is 47 percent and in Pazarbhanga it remains same as that of the overall proportion of female i.e. 43 percent. Interestingly compare to other two villages education and employment in the village Majkuchi is better and still the data is indicative of reducing females over the period of time.

Table 3.4 Male female population below 6 years of age

Children	Village			
under 6 years of				Total
age	Majkuchi	Nashatra	Pazarbhanga	
				109
Male	49 (59.8%)	18 (52.9%)	42 (56%)	(57.1%)
				82
Female	33 (40.2%)	16 (47.1%)	33 (44%)	(42.9%)
Total	82	34	75	191

Source: primary data collected during field work in 2014

### 3.4 Religion and Caste Composition

In Majkuchi and Nashatra, Hinduism is the dominant religion, whereas all households in Pazarbhanga are followers of Muslim faith. The population of the first two villages is stratified in different caste and sub-caste groups, while in Pazarbhanga none of the household reported any caste and only mentioned about the religion they follow. However, in Pazarbhanga majority of the households belongs to the Other Backward Class (OBC). Table 3.6, gives a clear description of the religious composition of the households in the three villages. The table shows that of the total number of 443 households in the three villages, 309 households belongs to Hindu religion and 131 are Muslim households. Hence majority of the households constitutes of Hindu religion of about 69.8 % and with 29.6 % of Muslim households.

Table 3.5 Religious Composition of Majkuchi, Nashatra and Pazarbhanga

Village	Hindu	Muslim	Total
Majkuchi	232 (98.7%)	0	235
Nashatra	77 (100%)	0	77
Pazarbhanga	0	131(100%)	131
Total	309 (69.8%)	131 (29.6%)	443

Source: primary data collected during field work in 2014

Majority of population in the research area are Hindu, 98.7 percent people in Majkuchi and Nashatra village are Hindus, and 3 households refused to disclose their faith, in Pazarbhanga 100 percent of the households are Muslims. However, religion is not the basic stratification criteria in the Hindu villages, the community is divided in different caste groups and these groups are ghettoized in different corners of the villages, particularly Majkuchi where multiple caste groups are inhabiting. Hence, understanding caste composition of these villages gives more insights in the social profile of the area. Caste also plays an important role in determining the accessibility, availability and affordability of any resources in normal circumstances and especially when there is any kind of crisis or natural calamities. In the study area, it was observed that the caste has a deep impact on the economic status and living standard of the people. There is a stark difference in the caste composition of the three villages. The

caste composition in Majkuchi is such that nearly half of the total population belongs to the Scheduled Caste, followed by Upper caste population with 35% and finally 15% of the population consists of Other Backward Class (OBC). Majority of the Scheduled Caste people in the Majkuchi either belong to 'Baishya' or 'Kaibartya' sub-caste. The hamlets of these communities are secluded from the main village. It was observed that there are different hamlets for the people belonging to different caste groups in the village. To the researcher's distress it was observed that the area belonging to the Scheduled caste population is the most backward in terms of basic amenities like housing, standard of living, water and sanitation and is located in the most interior part of the village. However, the respondents of Nashatra did not mention about any subcaste even though the total population of the village belong to the Scheduled caste. As mentioned earlier 100 % of the total population in Pazarbhanga village is Muslim. Majority of these families are Indian origins. There are however, some families, which are originally from Bangladesh, which is evident from their accent and Bangla dialect, which is different from the Muslim families who have been residing in this village for decades. These households however, deny that they are originally from Bangladesh. The mixed community of Muslims living in the same village sometimes results in disputes over power and land in which the families who originally hail from Barpeta often had issues with the people who had originally come from Bangladesh.

Table 3.6 Caste Composition of The Research Area

Village	Scheduled Caste	Scheduled Tribe	Other Backward Class	General
Majkuchi	113 (48.1%)	1 (0.4%)	35 (14.9%)	82 (34.9%)
Nashatra	77 (100%)	0	0	0
Pazarbhanga	0	0	131 (100%)	0
Total	190 (42.9%)	1 (0.2%)	166 (37.5%)	82 (18.5%)

Source: Primary data collected during field work in 2014

#### 3.5 Education

All three villages have a primary school, however, for high school the children have to travel to nearby villages. The children from Majkuchi and Nashatra travel to Patbousi for schooling from 5th class onwards while children from Pazarbhanga village go to Palhazi which is two kilometres from the village. 75 percent of the population in research area has attended at least four years of schooling. Among the 25 percent with no schooling, 60 percent are female. However, almost 83 percent of the children in the age group 6 to 10 years are attending the school indicating progress in the level of education. The number of male and female children attending school in this age group is almost equal. Even though majority of the children are attending the school, dropout from the school is a major concern as number of students reduces with increasing number of years of schooling. Almost 49 percent of the population has attended school up to 10 years. Among the illiterates, women seems to be dominating in numbers. Children in the area are engaged in some or the other economic activity. Young children particularly in the Majkuchi village work as vegetable vendors in the local market and most of the time are absent from the schools. In case of girls most of them, whose mothers are supporting family economically have to do the baby-sitting of younger siblings and support their mothers to manage household chores that results in loss of school days most of the time. So in the meanwhile, there are very few children who get opportunity to attend full time school. Thus, enrolment in the schools and completion of number of years of schooling really does not mean education in this area. Most of the families seem to be reluctant and show lack of interest as they assume that the higher education is only worth to get jobs and they cannot afford it hence education is not going to help them instead children should help their parents in supporting the family.

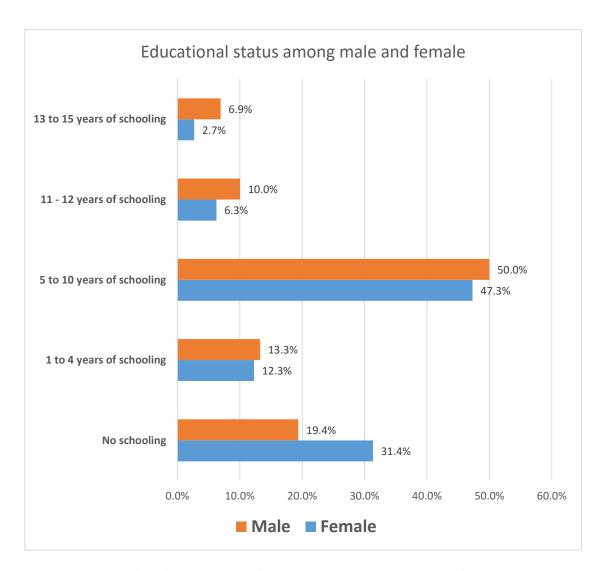


Fig 3.2 Education Among Male And Female In The Research Area

Source: Primary data collected during field work 2014

Among three villages Pazarbhanga, which is a Muslim dominated minority village shows dismal picture in education, where 37 percent of the population has never attended the school compared to 19 percent of Majkuchi and 25 percent of Nashatra. It is important to note that the villages showing low level of literacy are dominated by the socially backward communities. Although, the situation of higher education in all the villages is grim, Majkuchi and Nashatra show similar pattern upto 10 years of schooling. Majkuchi has more educated population, when it comes to more than 10 years of schooling.

### 3.6 Economic Profile of the Study Area

It is observed that in all the three villages' one of the most important concern is the source of livelihood. Majority of the people in the study area are engaged in informal sector. Especially in Nashatra and Pazarbhanga most of the men work as labourers, carpenters and helpers in any construction site. In Nashatra, there was not a single household in which there are men who goes to work in other cities for better prospects. But in Pazarbhanga majority of the men either work in Guwahati or in the coal mines of Meghalaya. In Majkuchi also there are few cases in which the men goes to other towns and cities in search of job. Although there are many households who are also engaged in agricultural activity, it is not their main source of livelihood. The availability of land for agriculture is very less. 73 percent of the household do not own land and among the land holders 79 percent own less than 5 Bighas of land and only 10 percent have more than 10 Bigha land that can support a family.

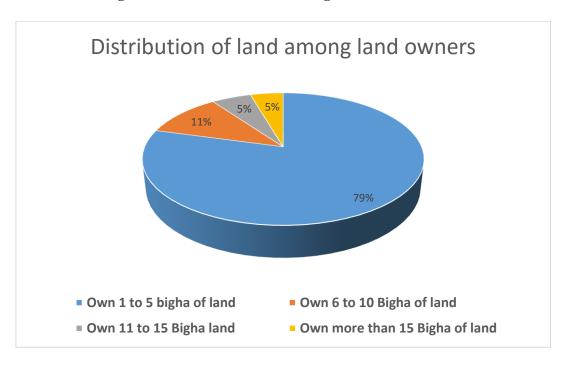


Fig 3.3 Land Distribution Among the Land Owners (N = 111)

Source: primary data collected during field work in 2014

The available land for agriculture is not sufficient for creating enough employment and supporting families for subsistence. Therefore fishing is an important occupation, especially for the people of Majkuchi. Although the fishing business is not seasonal during monsoon fishing is difficult. The Scheduled Caste population of the area are particularly engaged in fishing. The nearest market for fish is in Barpeta town. It is to be noted that the production of fish in Barpeta district is one of the highest in the state, even though the tools and technique used are mostly traditional. Despite large-scale production, the state has to import fish from other states, like Andhra Pradesh and Uttar Pradesh. In the absence of proper mode of transport and inefficient provision of export and other kind of government support, fishing is limited to local markets as a result of which the people from the lower caste faces acute miseries in the absence of proper local market for the access fish production in the district. Livelihood in Majkuchi is also supplemented by daily wage labourers. Majority of the household in Pazarbhanga depends on the daily wage income derived from labour work obtain in the Barpeta town.

### 3.7 Housing

Pazarbhanga village constitutes Muslim population where most of the households are OBC. The housing pattern in the village is suggestive of poor economic status of the society. More than half of the households are living in poor constructed huts made of local bamboo and tin plates. Only nine percent of the households in the village have access to improved housing. The houses constructed in the village are one rooms make shift house. These houses are constructed on the river embankment constructed by the government. As these are situated on the embankment they look like they are queued up in a straight row. The elevation of the embankment give height to the house where during flood the water does not enter in the house. The families living on the embankment had their houses in the main village which got submerged in the river during past floods. The government help these families and supported with rupees 100,000 to construct new house under the Prime Minister's relief fund. However, there is no space available or there is no space to rehabilitate hence the families shifted to the river embankment, which is the only elevated area. The width of the embankment is all the space they have to build their hut; there is no space for any other kind of construction. Therefore in this village 65 percent houses are huts made of grass bamboo

and tinplate of plastic sheets. As the embankment is the government land there is always fear among the community of eviction.

Poverty reflects in all three villages where more than half of the populations do not have access to proper housing, only 1/4<sup>th</sup> of the households are constructed with brick and mortar structure. Majority of these households are located in Majkuchi and belong to upper caste where 49 percent of the upper caste household have brick mortar structures, almost 1/4<sup>th</sup> of the schedule caste population have brick mortar houses with tin sheds. Compare to these two groups OBCs in Pazarbhanga seems to be most unfortunate in terms of housing.

The community in Pazarbhanga village is under constant threat of flood, the houses made of bamboo and tin plates are easy to dismantle and shift to other location so the people use this material to construct such houses. During the time of flood these houses are dismantle and relocated to other location and after receding of the flood water again shifted to the original location. Construction of such house is not expensive and most of the time local material such as grass is used to construct the house walls. Sometimes these houses are not even shifted the families leave the house and the place and after the flood recede, the families get back there. Even though such houses are convenient they are not sufficient to provide enough space and protection in all kind of weather conditions. These houses are not at all comfortable during summer hot and humid weather which make it difficult for neonates, pregnant and sick people to live in such houses.

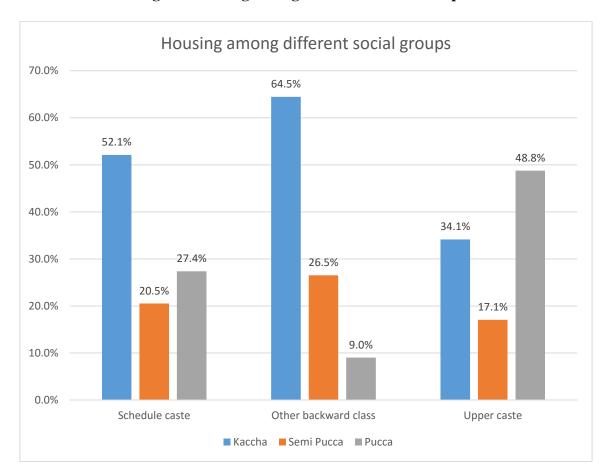


Fig 3.4 Housing among Different Social Groups

Source: Primary data collected during field work in 2014

Almost 60 percent houses have less than two rooms mostly used for sleeping, 23 percent of the households have more than 3 rooms that includes kitchen for cooking purpose. The Kaccha houses do not have space for cooking and most of the time the food is cooked outside the house. Naturally kaccha households also lack basic facility such as electricity and sanitation facility. Although electricity is available it is not accessible to all the households, Nashatra is a small village with households having better access to electricity most of the households do not have electricity metres or legal connections. Whereas very few households in Majkuchi and almost 58 percent of the households in Pazarbhanga village do not have electricity. Half of the households in Majkuchi and Nashatra village have televisions whereas only six percent of the households in Pazarbhanga village have television. Access to electronic media is very poor in the Pazarbhanga village.

Photo 3.1: Schedule Caste Household in Majkuchi Village



### 3.8 Access to sanitation

Much has been discussed and advertised about the recently launched Swaccha Bharat Abhiyan, it seems it has not yet reached to the villages in the study area. Limited access to means of information such as newspaper, radio only 15 percent own radio, television (as discussed only where half of the households in Majkuchi and Nashatra have televisions), where as in Pazarbhanga the percentage is very low, is one of the significant reason. Only few people in Majkuchi are aware about the Swachatta Mission through television. However, the general sanitary condition of the villages is poor as there are no proper drains and liquid waste flows on the ground in the village. This waste contains waste water from bathrooms and toilets, at times it gets stagnated in the surroundings posing major threat for health. However, for domestically produce solid waste in Majkuchi and Nashtra people use open space behind their houses to dispose the waste hygienically. The waste is disposed in a pit. In the village Pajarbhanga the poverty condition is such that even the production of domestic waste is very low,

generally the surroundings of the houses in this village are clean and properly maintained.

Basic prerequisite for maintaining the personal hygiene is sufficient water and sufficient space with privacy to clean oneself, which is a major concern in all three villages. Majority of the households do not have any type of bathroom for bathing. 12 percent of the households have some arrangement made for bathing, which is generally made of plastic sheet or cane walls supported by bamboo that provides some sort of privacy. In such bathrooms there is no provision for draining water outside and most of the time it gets stagnated. 30 percent of the households have well-constructed brick mortar walls and tin roof with provision to drain water outside bathrooms most of these bathrooms are in Majkuchi village. However, water coming out of such bathroom is directed out of the house but there is no public drainage to drain this water to proper disposal point thus this waste water keeps flowing though the village gets stagnated in the low areas creating nuisance of odour and mosquitos. Few households have a semi-pucca bathroom having brick mortar floor and walls constructed of cane wall and a roof made of plastic sheet.

Table 3.7 Village wise availability of bathrooms

Status of availability of bathing space					
		Majkuchi	Nashatra	Pajarbhan ga	Total
No	Total	119	2	116	237
bathroom	% within Village	50.60%	2.60%	88.50%	53.50%
	Total	35	12	8	55
Kaccha	% within Village	14.90%	15.60%	6.10%	12.40%
Semi	Total	14	4	5	23
Pucca	% within Village	6.00%	5.2%	3.80%	5.20%
	Total	67	59	2	128
Pucca	% within Village	28.5%	76.6%	1.50%	28.9%
Total		235	77	131	443

Source: Primary data collected during field work in 2014

Among the households having bathing facility are located in the Majkuchi village these households belongs to upper caste or Hindu OBC community. Although half of the houses in Majkuchi have some arrangement for bathing this space seems to be used by mostly women and men use open space for bathing. Almost 90 percent of the respondent reported that they use open space for bathing.

Another important aspect of sanitation is safe disposal of human excreta. However, this issue is given more importance than bathing space. There are no flush toilets in the area as they are expensive to construct, only one household reported to have a flush toilet in village Pazarbhanga. 71 percent of the households have insanitary latrine. The sub structure of this toilet is a shallow pit which is generally 3 feet deep depending on the ground water level. These pits area covered with bamboo sticks with a hole to defecate. The superstructure is mostly of cane sheet made of bamboo and most of the time there is no roof or a plastic sheet on the top for protection from rain. The superstructure is located at quite a higher distance to prevent contact from the excreta and a bamboo ladder is used to climb up to the toilet floor. The pits are not covered as the superstructure is at a higher distance from the pit. Water in the pit is soaked in the surrounding area where as the faecal material degenerates inside the pit. The depth of the pit give ample space to collet lot of volume and such substructure last for almost 2 to 3 years. Once the pit is filled it is closed and another pit is dug to construct a new toilet. Many of these toilets are not far away from handpumps from where the water is drawn for drinking purpose. As these are insanitary latrines as they do not have a water seal to pass the faecal material and pits are not closed to prevent the odour and insects coming out of the pit. Also they are dangerous as the ground water level in the area is shallow and there is every possibility of ground water contamination posing high risk of water related diseases. 26 percent of the households reported that at least one member of the family has fallen sick in the last six months from a disease such as loose motion, vomiting, dysentery and pain in abdomen.

Photo 3.2 Insanitary latrine in the village Majkuchi



Although the villagers seems to be understanding the importance of the toilet, they do not have access to proper technology to construct sanitary toilets. The major problem is of money; the water flush toilets are unaffordable to the poor people in the area. However it is important that the need for the toilet is understood by the village community in Majkuchi and Nashtra village, where more than 90 percent of the households have such form of toilet facility. Although, the Pajarbhanga village lack far behind rest of the two village with mere 17.6 percent households having insanitary latrines. The major problem of this village is of space as the houses do not have space to even construct a small pit toilet there is no other option for families other than open defecation.

Villagewise status of individual toilet facility 120.00% 100.00% 4.70% 9.10% 28.20% 80.00% 60.00% 81.70% 94.90% 89.60% 40.00% 71.10% 20.00% 17.60% 0.00% Majkuchi Nashatra Pajarbhanga **Total** Own pit toilet ■ No toilet

Fig 3.5 Village wise access to toilet facilities

Source: Primary data collected during field work in 2014

In Nashatra and Majkuchi almost 90 percent of the households have toilets does not mean that there is no of less open defecation. Although people have toilets in their households all members of the family do not use these toilets. Among the 315 households having toilet 220 reported that all members of the family use the toilet and no one from the family go for open defecation, while 98 families from Majkuchi reported that some of the family member go for open defecation despite having toilet in the household.

Table 3.8 open defecation among household having toilet facility

	Total number of	Total number of		
	households where all	households where		
	family member do not	all family member	Total HH owning	
Village	use toilet	use toilet	individual toilet	
Majkuchi	98	126	224	
Nashtra	0	70	70	
Pazarbhanga	0	24	24	
Total	98	220	318	

Source Primary data collected during field work in 2014

There is social acceptance to the open defecation in all three villages and is not look down upon. In recent past the norm associated with open defecation are changing in the light of reduced open space and exposure to media and urban lifestyle, toilet is being considered as status symbol particularly in the village Majkuchi. This is resulting in increased number of toilets particularly in the household with better economic conditions. However, these are not technically correct toilets that could prevent the water contamination and contribute to improvement of health. As the expectation from such toilet is only to provide privacy while defecating. In all the household having toilet, all members do not use toilet mostly the male members and prefer to go out for defecation. General rational of such behaviour is to reduce the use of the toilet to delay the filling of pit thereby delay the construction of new pit and new toilet and save the space for other purposes.

### 3.9 Access to Water

Water is among the basic necessities of life that determines the quality of life. Supply of water is a state subject that has been entrusted to panchayats or the local governing bodies by the state of Assam. The village panchayat seems to be unable to provide supply water to the households in all three villages. In the village Majkuchi and Nashatra the households have a backyard mostly with a pond where they grow fish for the consumption of the household. The water of the pond is mostly used for the domestic use such as washing. More than 90 percent of the households reported that

they draw water from hand pumps. It is easy to install the handpumps as the water level is shallow, these hand pumps are shallow almost 30 to 50 feet in depth. At times the depth is even less. The government provided community handpumps are deeper but most of them are not functional. None of the handpump supplied through the government scheme was working while the data was being collected in the Majkuchi village. These handpumps are dysfunctional due to lack of maintenance and most of the time people have the private handpumps so there is not much pressure of the local body to repair them as very few families use them. In the village Pazarbhanga post 2012 flood the government under a special scheme provided handpumps to the village households and around 60 percent of the households depends on these handpunps for daily requirement of water.

The water of hand-pumps is used for drinking and bathing purpose. Women in the household is responsible for collecting and storing water for household use. These women are well aware about the iron content of the ground water and some of the households who can afford filters are using filter to purify the drinking water. There is a kind of awareness about storage of drinking water, while it was observed that in all the households surveyed the drinking water pot was closed and was kept at a clean place. Generally if the appearance of the water is clean and there no odour the water is considered to be fit for drinking. As discussed earlier women are responsible for drinking water, and in the poor house holds the handpump is locate at distance it make life difficult from such households as the job become cumbersome. Women from 43 percent of the households reported that the water source is located at more than one kilometre distance. Thus fetching water becomes time consuming and laborious job. These households are from Majkuchi village 81 percent of the respondent in this village reported that the water source is located in the household, these are private shallow handpumps. While in other two villages the water source is around 500 meters from the households. In Nashtra and Pajarbhanga are the villages where SC and OBC Muslim community is concentrated respectively, in these two villages the water sources are mostly shared by two or more households. Most of the people in these two villages cannot afford personal hand pumps. In the household where water source is located outside the household or at far distance the water requirement is compromised, even though ample amount of water is available to use. The reason for this compromise is unavailability of sufficient storage facility or utensils to store water, water is fetched as

per requirement. Moreover fetching the water is laborious job. In such circumstances water need for bathing and cleaning purpose is compromised and less water is used for these purposes this certainly has implication on personal hygiene.

There is no supply or tap water provision for drinking purpose hence the villagers use hand pump water for drinking. There is common awareness about the high concentration of iron in the ground water and a sort of concern among the respondents in the Majkuchi area. However, there is no mechanism to test the pot ability at least the villagers are not aware of any such mechanism. The Panchayat has not taken any initiative to test water for its pot ability. Apart from the mineral content there is possibility of biological contamination of the water as the hand pumps are shallow and are located near insanitary latrines, but the people are not much aware about it.

Table 3.9 distance of water source from the household

Distance of water source from the household					
		Village			Total
Water source location		Majkuchi	Nashatra	Pazjarbhanga	
Handpump	Total	191	16	55	262
within	% within				
Household	Village	81.30%	20.80%	42.00%	59.10%
Handpump	Total	36	61	76	173
within 500					
mtrs from					
the	% within				
household	Village	15.30%	79.20%	58.00%	39.10%
Handpump	Total	5	0	0	5
within 500					
to 1000					
mtrs of	% within				
household	Village	2.10%	0.00%	0.00%	1.10%
Handpump	Total	3	0	0	3
more than 1					
KM from					
the	% within				
household	Village	1.30%	0.00%	0.00%	0.70%
<b>Total Housel</b>	<b>Total Households</b>		77	131	443

Source: Primary data collected during field work in 2014

Few households are using some water filters and some are aware about other water treating methods such as boiling. But the boil water is used mostly for the elderly in the family. In all the three villages 25 percent population as reported by the respondents, suffered from water related illness such as diarrhea, dysentery. The data of illness compared with the age group revealed that major victim of such illness are children in the 0 to 5 years of age group. Where 34 percent of the children in the age group of 0 to 5 years reported to be suffered from diarrhea or dysentery. While the next most affected age group is 6 to 16 years of age with 29 percent of the children suffered from at least one episode of diarrhea or dysentery. It is important to note that although these groups seems to be most affected the prevalence of such illness is reported in all the age groups in all three villages. Among those 543 reported suffered 503 visited doctor to sought treatment while only 37 reported to not to seek medical assistance for the illness reported.

Table 3.10 Water related illness among different age groups.

Water	related		Age gro	up		
disease such as diarrhoea, dysentery pain in abdomen with loose motions		0 - 5 Years of age	6 - 16	17 - 25 Years of age	More than 25 years of age	Total
Suffered in last	Total population	64	136	85	258	543
six months	% within Age group	34.40%	28.80%	20.70%	24.50%	25.60%
Not suffered in last	Total population	121	336	325	791	1573
six months	% within Age group	65.10%	71.20%	79.30%	75.30%	74.20%
Total	Total population	186	472	410	1051	2119

Source: Primary data collected during field work in 2014

The poor hygiene and poor quality water is an important factor in emergence of such diseases because of which there is added burden of medical treatment on the poor families. Presence of large amount of open defecation and use of shallow hand pumps combine is a serious threat to health of small children. In a situation where diarrhea is among the leading causes of child mortality (WHO, 2013) and in India poor sanitation; hygiene and lack of safe water contribute to more than 450,000 child deaths (UNDP, 2006), the young children in the research area are under constant threat of death. Absence of proper sanitation facilities leaves no other choice than open defecation for poor people. This is resulting in contamination of drinking water sources adding to the threat of water borne diseases. There is a sub centre available in Majkuchi and Pazarbhanga where people seek treatment for minor illness, but most of the time there is no doctor or medicine available to treat patients. Moreover, the ANM at the subcentre charges fees to treat patients. In such situation, people prefer to go to civil hospital located at the Barpeta town. At the civil hospital the treatment is free but the travel and loss of wage for treatment add economic burden on the families.

## 3.10 Conclusion

The first thing that strike after visiting these villages is presence of absolute poverty. These three villages represents real picture of deprivation. Especially in the village Pazarbhanga, people living in such inhuman conditions is heart breaking, the conditions are not at all suitable for living or not meant for human living at least in this century. While the area is endowed with abundant water it has proved to be bane more than a boon, although the river is major source of livelihood for many families living in the area. The recurring floods keep wiping all that has given to the community. The life in the village Pazarbhanga is like living life of a nomad at one's own land. Every year there is flood, every year there is guzzler and the houses are displaced, relocated and again resettled. In such situation, where there are no basic amenities like housing, toilet, electricity population lives in a desperate condition. Village Majkuchi and Nashatra have some influence of the external world with some access to media and television but that is only limited to few of the families. This influence is resulting in increased awareness and creating aspiring generation for better life. However the general condition of all three villages is more or less same, with little better housing and income

generation sources in Majkuchi. The young generation is still waiting for better life options. Among the different social groups in the area life of Muslim community is more difficult followed by the schedule caste population in the Majkuchi and Nashatra village. Only the upper caste population have little bit access to resources such as better employment and land and are comparatively living better life even though it is hard to say that they are developed.

The religious background and the history associated with the village Nashatra and its status of top pilgrimage in the Vaishnav sect of Hindusim has not benefited the village community to improve their living condition. This has not come to an advantage for the village community to be developed in a tourist place and creating employment. There seems to be collective ignorance about the external world and the life in these villages becomes a life of solitude where there is no awareness about once own situation and demand for better life and future. All that one could observe is the struggle for daily bread and butter. It is not that all have lost their consciousness, some of the families' are aware that the situation has to change and there is an attempt to do so. Some of the village elders although not educated mentioned that it is their duty to educate their future generation and as a result noticeable proportion of the youth in Majkuchi village have climb to higher education but this consciousness has remained with upper caste and few houses who owns reasonable amount of land. This awareness is not trickling down in the lower caste, daily wage labourers and marginalised Muslim communities. The education level are strikingly low especially, women are most unfortunate when it comes to education. With increasing number of years of schooling the number of drop out increases in all three villages and in case of women it increases drastically. There is very rare case where women are attending college. Low level of education limits the scope of employment. Whatever resources are available are not being optimally used or employed. Traditional fishing community is still dependent on the conventional techniques of fishing that are completely manual labour based. Although the district is very important in fish production and there are some efforts made by government to improve the fishing absence of market, connectivity and general development is major hurdle. Machines and modern technology could be of help to improve the fish production but this seems to be out of bounds for the village communities. The children in the area, in the age of going to school and dreaming a fancy future for them are seen with parent in the market selling vegetables and supporting families. While young

children in the absence of proper clean water supply and lack of awareness about health and sanitation are under constant threat of diseases irrespective of their social or economic status. There is collective indifference towards the sanitation. The households owning an individual latrine putting themselves in risk due to ignorance about the proper technology to construct toilet. The present toilets are insanitary, without water seal breeding grounds for flies and insects. They are located near hand-pumps and contaminating water.

These three villages are collective tale of underdevelopment and poverty looking for hope and courage to change their existing situation. Since flood is an annual affair in the Barpeta district it causes massive destruction in majority of the villages including the study areas depending upon the intensity of annual rainfall. It is known to mankind that there are many causes under natural, geographic and anthropogenic factors that leads to flooding. It has already been mentioned that the unique topographical factors and torrential rainfall are the most important natural causes of flood in Barpeta district. Other factors like deforestation, encroachment of flood plains for various human activities and unplanned construction of embankments are common anthropogenic factors which results in flood situation almost every year. Eventually these factors results in the fluvial regime of the most important rivers Manas, Beki, Pahumara and Kaldia which flows through the district (Talukdar, 2005). It is also important to remember that the factors responsible for flood in the three villages slightly varies from each other. In case of Majkuchi and Nashatra the most important causes are heavy rainfall during the months of June to September and also the geographical location of the villages is such that they are situated on low lying areas near river Beki. On the other hand in Pazarbhanga flood situation often occurred due to destruction of embankments. Embankments which are mostly constructed without any supervision of experts or without any scientific plans are usually built to fulfil the temporary mitigation measures post flood.

However in case of Barpeta it is important to note that certain catastrophic events in the past like the two major earthquakes which occurred in the year 1897 and 1950 respectively had resulted in tremendous geographical changes in the state which led to the changes in the fluvial regime of the whole river direction in the Barpeta region (Gait, 1905). One of the pioneers who dwelled on the study of history of flood, Naba Talukdar have expressed that since the first major earthquake in 1897 Barpeta would

become unconducive during monsoon season and the severity of flooding took a major leap after the earthquake in 1950. Records from the district Gazetteers and other literatures express that the 19<sup>th</sup> century experienced some of the worst floods in the area that not only brought irreversible miseries to the people but also collapsed the entire economic situation of the district. Even some of the recent floods in the last three decades that occurred in the years 1986, 1987, 1988. 2004 and most recently in 2012 and 2014 proved to be very fatal and brought untold miseries to the people in Barpeta district let alone economic breakdown and paralyzing the development processes (Talukdar, 2005).

Since disaster like flood causes considerable disruption in the social, economic and political aspects in flood affected areas, it also has serious repercussions on the people's health. Flood water carries micro-organisms and other pollutants contaminating the drinking water sources and consequently it gives rise to many water borne diseases causing serious threat to the people. Sometimes the situation worsens if the diseases from flood affected areas are spread to the other places in the form of epidemic (Talukdar, 2005). The gravity of the problem expands when the people are vulnerable and are not in a position to cope up with the situation. It is important to note that flood is not the only factor which gives rise to different health problems, there are other factors which plays equally important role in elevating the agonies and helplessness of the affected population. Moreover a study on the plight of people in the research areas would throw light on the different aspects of vulnerabilities and limitations of these groups of people especially belonging to the weaker and the most fragile section of the society. Hence in the following chapter the researcher have dwelt on the access and availability of health care services in the three villages at the time of flood. The following chapter not only reveals the poor health care services in the district but also throws light on lack of health care services and ignorance from the part of the state with respect to reproductive and child health especially in flood prone areas. Geriatric care and their problems in flood affected areas is another aspect which have been ignored in disaster related studies in the rural areas of Assam. The researcher have therefore tried to discuss some of these aspects in the following chapter.

#### **CHAPTER FOUR**

## Access to Health Services in Flood Prone Areas of Barpeta

## 4.1 Health Infrastructure in Barpeta District

The district has one medical college and a civil hospital catering to the Barpeta town and 925 villages covered under 11 development blocks. The district has 20 health facilities delivering primary health care services including maternal and child health programme. Being one of the poorest districts in the state of Assam, the condition of health care providers and health institutions are also poor compared to other rural areas in the state. Apart from poor infrastructure and lack of sufficient hospitals, accessibility of these institutions also is a major issue. It is important to mention that apart from the existing hierarchy in the society that refrains the poor and the deprived from availing even the basic health care services, the recurring flood every year in the area and also the geographical location of Barpeta district is also such that it is not conducive for the people to travel to health care institutions all throughout the year. It is noteworthy to mention that nearly one third of the total roads in the rural areas of the district are accessible only during winter season as the roads remained closed or are in dilapidated condition due to heavy rain and flood in the summer and monsoon seasons. Recurring flood results in disruptions in the road communication causing massive damages to the muddy roads and in some cases the raging water causes big cracks in the roads which eventually remains inaccessible for most part of the year. Since majority of the roads are under construction or joined by temporarily constructed bridges using wooden logs and bamboos, they are easily destroyed by the rising water level and fast currents. While majority of the Primary health care centres are located at a distance of more than five kilometres from the villages, the condition of the roads and transportation to the PHC's are not well developed. There are some PHC's in which accessibility is possible by foot throughout the year, however transportation by vehicle becomes a major concern during the rainy season as most of them are kaccha roads. Even though the condition of access to medicine shops is comparatively better than the health care institutions, the overall situation is dismal and highly constrained. The detailed data of health infrastructure in Barpeta district have been mentioned in Table 4.1.

### Highlight on the Reproductive and Child health Programme in the district

An important component of health care system, which has been emphasized in the study, is reproductive health care system. Even though there have been continuous effort to improve the maternal and child health care in India since the inception of five year plans with special emphasis on the poor communities in the rural areas of India yet three out of five babies in India are born at homes (NFHS 3, 2005-06). In fact the situation in Assam is dismal compared to the national percentage as only 40 percentage of the total delivery takes place in health care institutions or attended by trained personnel as compared to the national figure of 52.7 percentage (DLHS 3, 2007-08). In the field, it was observed that different programmes under the RCH like ICDS and antenatal and postnatal care facility was not functioning properly in all three villages. It is essential to understand the backdrop of reproductive and child health care programme in India especially how socio-economic factors also play a crucial role in proper function and accessibility of this programme especially by the people belonging to the deprived and minority communities in the rural areas. This is one of the important areas that allowed the researcher to understand the health problems of women and children in all the three villages and also accessibility and availability of the government health programmes in non-flood situation and also with the onset of flood when it has strong repercussions on the health of pregnant women, new mothers and children. The researcher has cited case studies to throw light on the poor reproductive health care services in the flood-affected areas in rural areas of Barpeta district in Assam in the following sections.

Table 4.1 Health infrastructure in the Barpeta district

Nature of Hospital	Total available facilities in Number
Medical College	1
Civil Hospital	1
Community Health Centre	7
P.H.C including M.C.H.	20
Mini PHC	20
Dispensary	8
T.B. Chest Clinic centre	2
Leprosy centre	1
Sub-Centre	264
Subsidiary Health Centre	2

Source: Barpeta district administration, 2015

### The role and essence of boat clinics in the flood affected areas of Barpeta:

It was in the year 2005, when the Centre for North East Studies and Policy Research based in New Delhi had developed the idea of boat clinics when they felt the dire need of health care services to the people living in the islands under Dibrugarh district (Ministry of Health and Family Welfare, GOI). Later when the NRHM was introduced in 2005 it co-ordinated with the Boat clinic and under its partnership 15 such clinics were established in thirteen districts in Assam. Considering the gravity of flood affected population and repercussions of people living in flood plains or near Char areas, two units of Boat clinics were set up in Barpeta and Dhubri district respectively. The main responsibilities which are entrusted on the Boat Clinics are to deliver health care services like Curative and Preventive Care, Reproductive and Child care, Family planning services, Basic Laboratory services and emergency services required at the time of emergencies like disaster, epidemic and accidents to the marginalized people living in the Char areas. However it is to be noted that even though the initiative of Boat clinics was a successful endeavour, nonetheless the entire flood affected and Char areas even under the assigned districts are not covered under its service delivery. Even though none of the villages under the universe of study had access to Boat clinic it is important to refer to this system of health care delivery as an efficient implementation and operation of this service would have brought milestone results in terms of access to health care services by the poor and marginalized section in the rural areas who are often ignored or left out at the time of emergencies like flood. Despite two Boat clinics being assigned in the Barpeta district, it is important to mention that most of the time it is non-operational or lack efficiency. Consequently the number of patients who has availed the services of Boat clinic is very less. Hence the present condition of Boat clinic in Assam is in a worrisome state. Despite of such a great initiative evolved from public private partnership the Boat Clinics in the researcher's eyes have failed to recognize enduring services to the most fragile section of the society.

# 4.2 Health problems reported in the research areas

The Baseline Survey on Minorities Concentrated Districts conducted by the Omeo Kumar Das Institute of Social Change and Development Guwahati in coordination with ICSSR has done extensive research in the thirty villages under Barpeta district. The findings of the research reflected upon the different health problems found across the

different villages dominated by both Hindu and Muslim population as they form the majority population of the district. It was found that people from both the communities reported fever to be the most prevalent among all age groups. Next in order in terms of higher prevalence rates are stomach pain, gastric problem, malaria, tuberculosis, diarrhoea, skin diseases and pregnancy related problems. Moreover in the present research also these were some of the highly prevalent diseases found in all the three villages. However in the course of collection of data the researcher found some cases of developmental disabilities among people from different age groups from 12 years to 40 years in the villages Majkuchi and Nashatra. Even though the number of cases are not as high as other diseases like diarrhoea, gastric and fever it cannot be ignored. The researcher found that there were about seven cases of development disability in Nashatra and Majkuchi village. However no such cases were observed in Pazarbhanga village. The researcher found it disturbing that neither the health workers let alone the other stake holders in the villages were willing to discuss the causes of the prevalence The villagers perceived a person suffering from developmental of this problem. disability as a mentally disabled and create an atmosphere that not only traumatised the sick person but also creates an un-conducive atmosphere for the other household members.

It is a common fact that since India occupies about 18 percent of the world's population it is apparent that the number of patients including developmental disability will be more. In fact before the term developmental disability was developed certain symptoms mostly comprising of mental retardation, autism, cerebral palsy, difficulty in learning etc. were used to understand what is today understood as developmental disability. However in case of the study area considering the population sizes of the two villages, the number of patients suffering from this problem is considerably more. It is important to remember that both environmental issues, which constitutes of lack or absence of proper prenatal, perinatal and post-natal care and genetic factors like Down syndrome or metabolic factors contribute to the development of this problem. In the present era developmental disability is a raging problem especially among the children. Yet it is considered a stigma and instead of encouraging proper check and prevention, people suffering from this problem are left traumatised and in many cases unattended. It was observed that in all the households with cases of this problem it was the female members or young girls who were endowed with the responsibility of taking care of the

disabled member. Right from feeding and cleaning them it is always the female members as a result of which the young girls have to either drop out from the school or in some cases they have never attended the school as the moment they derive little maturity level and understanding they are endowed with the responsibility of taking care of the disabled member in the family. Since in normal circumstances they are the one who is endowed with all kind of household activities, in such circumstances when they have also have to take care of a person who is not capable of doing anything by itself certainly added additional burden on their shoulders.

# 4.3 Access to health care services

Issues related to health and health services are major problems in all the three study villages. Since all the villages are situated near the river banks or on the low lying areas they are prone to flood as a result of which cases of different types of water borne diseases are common every year. Accessibility and availability of health care services in all the villages is poor. Despite presence of a sub-centre in the villages, the situation is almost dismal, as it has failed to cater to the health care needs of the people in the respective areas. Majkuchi, Nashatra and Pazarbhanga do not only provide a gloomy scenario in terms of socio-economic condition, but also emerged as one of the most unfortunate villages where despite of presence of sub-centres the villagers are refrained from the services of basic health care delivery. In the subsequent sections the researcher have discussed some of the important aspects in context to access to health care delivery in all the three villages.

The nearest sub-centre in Majkuchi and Nashatra is situated in Namakha area within Majkuchi village. The sub-centre is easily accessible by majority of the people in both the villages and it was observed that due to lack of sufficient stock and supply of medicines and unavailability of professional health care provider the condition of the sub-centre remains partly non-functional. Issues related to health and health services are major problems in the Majkuchi village. As it is a very flood prone zone, cases of different types of water borne diseases are common in the village every year. Despite presence of a sub-centre in the village, it is almost non-functional as the villagers complained that whenever they go there for any medicine they have to pay money for it or the ANM would claim that the medicines are not available. They said that even if a doctor comes once a week, the problems of the people would be solved considerably.

There is not a single doctor's clinic within the vicinity of the villages. The respondents said that most of the time they do not have medicines for gastric, stomach upset and fever which are the common ailments in the village. So they would go to ASHA seeking medicines instead of going to the ANM in the sub-centre as they always come back empty handed. Even if the ANM would provide them medicine, she charges money for it. In such circumstances it becomes very difficult for the people to spend money on medicines taking into consideration the meagre income of the family. However they are left with no other choice but to accept whatever medicines they get from the sub-centre as they find this more convenient than going to a hospital or for that matter the nearest PHC which is situated in the Keotkuchi village which is far from Majkuchi. The compounder of the Sub-centre who is also the husband of the ANM is a quack and prescribes medicines to the people by looking at the symptoms of the patients. He is also a 'tantrik'/faith healer and provides indigenous medicines for problems like fracture, back pain, chicken pox and measles. The respondents also said that there are many people who have deep faith in such superstitious beliefs. When the researcher asked them why the villagers don't fight for their right and questions the compounder and the ANM about the wrong thing which they are doing, some of the respondents said that even they had discussed the issue with the other villagers many times. They say that even if they have to pay the money they are at least getting the medicines otherwise they have to go to Barpeta town or other place where there are medicine shops. The ANM and her husband is taking fullest advantage of the ignorance of the helpless people and also the fact that there are no medicine shops and doctors available within a vicinity of few kilometres from the village that makes it a conducive atmosphere for such corrupted activities.

As the nearest PHC is in the Keotkuchi village it is far from Majkuchi and Nashatra. Majority of the households in Majkuchi do not own any kind of vehicles. Hence during emergency it is difficult for the people to arrange for a vehicle to carry the patient to the hospital. Although there is provision for 108 ambulance service, they are only available when there is major health problems or during severe medical emergency. But during flood people do not have access to the services of 108 ambulance even when there is any emergency. The mode of transport is not viable in the village as mostly during the daytime only rickshaws are available and the shared auto service from the Patbousi village. This is also an expensive affair for the people as they have to spend rupees

thirty to forty in rickshaw to go to the civil hospital in Barpeta town. Sometimes it is even difficult to find one at times of emergency and these shared auto services are only available till the main market area in Barpeta town which is far from the civil hospital. So transportation is undoubtedly one of the most major issues in Majkuchi village, which causes severe problems to the people at the time when all the roads are submerged under the flood water creating a situation of havoc. It was observed that in normal circumstances it was difficult for the people especially the women with children and elderly people to commute to other places for any family affair or emergencies as apart from unavailability of sufficient number of autos and rickshaws, it becomes very difficult to meet the expenses of transportation. Since the demand of mode of transportation is more and the supply is less so it is most unlikely that these auto drivers and rickshaw pullers aren't ready for bargain. Moreover for majority of the auto drivers and rickshaw pullers this is the only source of income.

The situation in Nashatra is almost similar to Majkuchi. Access to health care system for the people of this village is significantly poor than all the villages under the Patbousi Gaon Panchayat. As mentioned earlier the nearest Sub-centre is located within Majkuchi area. Considering the condition of the sub-centre it is vain to expect any basic health care services let alone free medicines from the sub-centre and consultations. However it was observed that the ASHA workers in the two villages were efficient in terms of health care delivery. One of the most important task of the ASHA is to maintain the records of the newly married couple's in the village and also to keep track of the pregnant women in order to keep a check and delivery of services for pre-natal and post natal advices and fulfil all other requirements till the delivery of the baby. In terms of availability of medicines with the ASHA, they often has to face problems in context to her limited stock of medicines as she is provided only 100 paracetamols per year and comparatively decent amount of contraceptives for birth control.

In case of Pazarbhanga, the condition of Sub-centre is comparatively less dismal than Majkuchi and Nashatra. In Pazarbhanga village the two Sub-centres makes it convenient for the people to access basic health services. The two sub-centres not only cater to some primary health services to the people living in the village but also the people residing in the embankment area of the village are heavily dependent on the sub-centre for different health problems. It was observed that ASHA workers play an

important role in creating awareness among the people especially the pregnant women about pre natal and post natal care, use of contraceptives and importance of sanitation. Majority of the women in this area rely solely on ASHA for pre-natal care services as this is the most convenient option for them as the socio-economic condition of the people is such that it becomes very difficult for them to visit the doctor every time for follow ups and also the distance from Pazarbhanga to the nearest PHC.Apart from giving medicines free of cost for health problems such as diarrhoea and fever, saline drips, contraceptive pills and condoms are also provided free of cost depending upon its availability in the sub-centre. Every Wednesday the sub-centre holds an immunization camp. The ANM members work in collaboration with ASHA members, who have taken up the role of spreading awareness of immunization among villagers and taking vaccines in such camps. Previously people were apprehensive of the use of vaccines and iron tablets, thinking it would lead to sterility. But gradually this perception of people is changing with awareness and people are opening up to use of vaccines and iron tablets. It was observed that most of the women in the reproductive age group were anaemic.

The health workers also showed serious concern about the fact that majority of the women belonging to the Muslim community especially living in the 'Char' area and also near the riverbanks get married at an early age, many of which are married off even before they attain the age of 18. Poor economic condition and conservative socio-cultural practices leads to the early marriage of these women. Moreover, these women are also not very educated, majority of them have hardly attended school and the number of dropouts is also more after few years of schooling. Reasons for it are: fear that the girl may elope and brings shame to the family, and, superstition that keeping an unmarried girl in the house for long brings misfortune. The ASHA expressed that presently a practice of early marriage for girls has been done away with. Even the government has curtailed such practices. However despite of government's intervention to ban early marriage for the girl's majority of the young girls are married off at an early age due to the extreme poverty stricken condition of the family.

In case of Pazarbhanga access to health services becomes even more difficult as people who are responsible for providing health services are caught up in such vulnerable condition that it becomes extremely difficult for them to cope up in such an

environmentally degraded condition that providing health services to the people in such fragile condition becomes very difficult. It will be wrong to say that the ASHA or the ANM who are most accessible people in the village in normal circumstances do not perform their work efficiently as they are equally trapped in the disaster prone situation like other people in the village. In this regard the ASHA in Pazarbhanga have narrated the story of her own plight during flood situation. When floods arrive, they do not even have enough resources to construct 'Bhels' or banana-trunk rafts, let alone owning a boat. So they send their children to the relatives, while the husband and she put up on the 'chaang' or an elevated bamboo roof on stilts. They keep dry food items such as pounded rice and puffed rice in the inventory so that they can use it during emergencies. Until the water recedes they stay up on the 'chaang' like that. They raise the cot on bamboo stilts and secure it with ropes. It is very scary because it may fall over if not secured into place, well. It is difficult to describe the situation unless it is witnessed with your own eyes. She said that in other villages every time there is flood victims are provided with relief assistance. However, in Pazarbhanga, they have never received any relief till date. Different parties keep saying that relief would be provided to them by the other, and slip out each time. They barely have all the food items to eat. Food is prepared in bulk for the entire day and for the entire family, whenever there is an opportunity to prepare a stove and cook. If they cook in the morning, they eat the food prepared for all the other meals in the day.

"I have been working as an ASHA member since 2008. I was working in Borkhul before. Up until now, the river has damaged our property five times. It has been four years since I shifted with my family here".

## 4.5 Water and Sanitation in Majkuchi, Nashatra and Pazarbhanga: From health workers perspective

The ASHA workers are aware of the poor condition of water and sanitation in the villages Nashatra and Majkuchi. Since Barpeta is situated on a low lying area ground water is easily available. Irrespective of easy availability of ground water the people in the villages suffers immensely due to contaminated ground water caused from open defectaion and insanitary latrines prevalent largely in both the villages. The ASHA workers expressed that in the year 2010-11, the public health department in convergence with the ministry of health have asked them to record the total number of

BPL families in the their respective assigned villages and also the number of households which do not have toilets. This task was part of the total sanitation campaign, which gave subsidy to BPL families to build low cost toilets under the campaign. Although there were some number of households that were provided with the low cost toilets under the TSC, this scheme failed to meet its goal due to several reasons like lack of maintenance by the beneficiaries, non conducive environment caused by recurrent flood every year and most importantly the researcher felt that the government did not kept people's socio-cultural behaviour in their minds before construction of these toilets. The researcher felt that government failed to understand the perceived notion of sanitation among the villagers and that a toilet was mostly perceived as an entity for privacy and not for maintenance of sanitation. Nevertheless the scheme also failed as the entire process of implementation of the scheme carried corruption from the grass root level to the government officials. Apparently there were also discrepancies in terms of allotment of toilets among the villagers. Hence these were some of the reasons, which led to the failure of the scheme in this region of the state.

So far two Village Health Sanitation camps are also held in Pazarbhanga village since the inception of the programme. The government have constructed few low cost sanitary toilets in the village free of cost to BPL families, which have withstood floods. However due to lack of maintenance and absence of walls surrounding the toilets, these toilets remains unused as they remain barren in the open fields. A detailed description and data of the percentage of water and sanitation is discussed in chapter 3.

### 4.6 Different health problems and difficulty in accessing health care services during flood

The ASHA and ANM in all the three villages referred to the different health problems that are usually observed during flood in every year. In almost all the cases the victims catch cold, high fever and suffer from diarrhoea or nausea. Some people also get warts from staying in water for prolonged periods of time. In other cases when the village is not flooding there are no such major ailments seen to be occurring among the villagers, except for few cases of tuberculosis from time to time. However, immediate medical attention and availability of DOTS care has helped deal with the disease at its precursory stage of its development. When an ASHA worker from the village

Pazarbhanga was asked what she usually do if a pregnant woman needs her help and assistance she replied that during floods, when a woman has to deliver a baby, it is their duty to reach the patient without fail and transfer her to a medical facility. For this they row by 'bhels' (banana-trunk rafts) or construct 'chaang' to transfer the expectant mother on it. In this aspect she narrated a case in which a woman had to be carried to the nearest hospital from Pazarbhanga under severe circumstances in the absence of ASHA worker.

"One of my colleagues had to face a similar situation last year (2014) where ASHA members could not help the woman deliver the child normally and prescribed that she is taken to the nearest medical facility so that she can undergo caesarean section. As she was unable to walk during pregnancy, so she had to be carried on the chaang like a stretcher, to finally drop her at the nearest medical facility. It is not so easy to manoeuvre a patient on a chaang and then on a boat/raft; the boatmen have to pull at the chaang to lower it into the boat, and right after reaching destination carrying the patient on the stretcher/chaang unless a mode of transport is not found which can move the patient to the medical centre. Our roads are in a disparaging condition, so even helpline services like 108 do not come here during floods and on normal occasions as well. Hence, women neither get picked by an ambulance nor are they dropped back home from the medical centre by the same. Floods have further deteriorated the condition of roads".

On being asked about the provision of medical facilities by the State Public Health Department she said that, Public Health officials arrive during floods to distribute non-prescription drugs for fever, cold and diarrhoea. Apart from that they also distribute ORS. These officials come only during the rainy season, as it is only then that floods occur in Pazarbhanga and the level of sick people rises under such circumstances. Regarding what the economically deprived families do when they require medical attention and also how do they move the patient to the medical centre, the ASHA agreed that such families face difficulties in providing medical care. In cases where pregnant women are concerned, ASHA steps in and moves the woman to the nearest medical centre. In other cases, when children are sick the families bring them general non-prescription drugs- when everything else fails and the children still do not recover it is only then they are taken to a physician. Most difficulties arise due to economic

constraints. Even if a person is a rickshaw puller or cart puller he has to manage somehow. In most cases the poorest families come to them seeking help. In fact none of the health providers like ANM, ASHA or anyone from the department is provided with boats, unlike other departments- for instance, teachers are provided boats to row students to safety. As such even if there is an emergency to attend to a patient, there are severe bottlenecks in navigating through the floodwaters.

Moreover, in the following section the researcher have discussed some of the case studies of women who not only had to bear the brunt of nature's brutalities but also lived amidst all the pain and suffering that never ceases to end. These women respondents comprise of geriatric woman, pregnant women and mentally challenged women who shared some of their experiences living in one of the most geographically fragile areas. The researcher felt that an insight into the case studies about their experiences filled with turmoil and vulnerability would provide better understanding of how a natural disaster like flood has an implication on the health of women especially women belonging to the reproductive age group and geriatric age group. The following case studies does not only throw light on how women particularly the weaker and the immobile ones are worst victims but also does emphasize on the different factors that adds to the vulnerability of their situation. The researcher has put down their distressed experiences in their own words for a better understanding of the intensity and severity of their plight.

#### Case Studies

### a. Different health issues among the older people in the study area:

Meera Das, an old woman of about 72 years old live in the Namakha area of Majkuchi. The news that a researcher was working on the different issues related to women during flood was known to her she immediately stepped up to share some of the experiences filled with agonies and helplessness in the hope of receiving some help in the form of relief from the government. She expressed that at this old age with no financial support or assistance from any source it becomes very difficult for her to take any kind of decision. She is a patient of hypertension and rheumatism. Regarding medical care for her health problems she said that whenever she gets some money from someone or if her daughters who are married and lives in other villages under the same district give

her some money its only then she could buy medicines for her hypertension from a chemist in the Keotkuchi block which is 3 to 4 kilometers from Majkuchi. She said that she has to walk to the chemist and buy the amount of medicine she could afford from that money. There are many times when she is unable to buy her medicines due to lack of money, which deteriorates her health even further. Even in such situations she does not ask her son who lives in Guwahati and does odd jobs to support his family in Barpeta. She does not want to become a burden to her son with extra expenses by asking for money to buy medicines. Apart from receiving meagre financial assistance from her daughters she also work as a helper in any ritual or function held in the village from which she earns very little money.

She mentioned about an incident, which took place during the monsoon season in the year 2015. She recalled how the water level started rising in the middle of the night due to heavy rain which occurred throughout the day. Since her son was away and she was with her daughter-in law and her small child they could not do anything to get out of their house nor could they call for help. They thought the water would subside if the rain stops and eventually they spent the entire night standing in the middle of water by holding a bamboo which was used to support the roof of the house. It was only in the early hours in the morning when there was some light the family moved to the school, which is situated some blocks away from their house to take refuge. She mentioned that they could not even keep their clothes and other belongings at a safer place and had to rush to the school with few pieces of clothes and essential utensils. The respondent also expressed the kind of difficulties they have to face and the distressful situation that engulfed them when they have to seek shelter at a safer place away from their home. Usually they go to the primary school, which is situated near the main road. The building is constructed using bricks and concrete, which prevents the water from easily damaging the place. It's not very big in structure. There are four to five rooms, which could easily accommodate 20 to 30 students in each room. So whenever there is flood these rooms, they are occupied by 9 to 10 families depending upon the sizes of the rooms. Whosoever comes first gets space in these rooms. It is observed that most of the people who goes there and resides are mostly from Namakha area of Majkuchi village, which is dominated by the Scheduled Caste population. There is lesser number of families from the upper caste households who usually go and stay there whenever the flood damages their houses. She also mentioned that even though they save themselves

from the rising water levels, which eventually damage their homes. The researcher have drawn these cases not only for their individual significances but also for the fact that these are not new or rare instances instead every year if there is flood similar events repeats so as the agonies of the people.

She also recalled an incident from 2014 when she and her daughter in law had no food to eat for three days. The child was somehow sent to his uncle's place and both of them had to suffice on puffed rice for these days. Initially they did not get any space to cook and with the little money that they brought with themselves bought some puffed rice as it was impossible to cook in such a congested and crowded place. They could not sleep for many days as there were noises coming from children's crying, people fighting over their assets like utensils and woods being used without their permission, quarrels over the toilet every morning and so on. They had to stay in the school for ten days. It was only when the rain stopped and the areas, which were flooded started drying they moved to their home.

It was observed that older women are at greater risks during emergencies as their mobility becomes difficult and lack of knowledge prevents them from escaping and subsequently in many cases in the study areas they are trapped amidst flood. It is to be noted that it is difficult for women and men after certain age group to climb up and down the 'chaang' let alone the elderly people. Regarding defecation they have no option but to relive themselves wherever they are. Whenever, the people get a hunch that water may dry up along a high rise are, they send away the elderly to such spots. It is very difficult for one and all during floods. Another respondent expressed her plight saying that next rainy season they are anticipating more difficulties during floods, as they do not have a river bund. Whenever water swells in the river slowly all of it flow towards the village, unchecked.

### b. Complicated pregnancies due to lack of proper reproductive health care facility: Case study

In this sub-section the researcher have discussed some cases which emphasizes on the problems and difficulties faced by pregnant women and women with small children. The researcher have put forward some of the cases regarding complications during pregnancy and their access to health care facilities in non-flood situation and also at the time of flood. It is also essential to note that women find it difficult to move or travel to

other places with their children in such health conditions. In the absence of any male members in the family at the time of flood these women had to not only take care of other members of the family but also take care of their small children who are completely helpless and immobile in such environmental degradation state.

The first case study is about a woman who had lost five babies immediately after delivery. The respondent is currently a resident of Majkuchi village and is 29 years old now. She got married at the age of 18 and delivered her first child immediately after one year of her marriage. Her husband is a labourer who lives in Guwahati. The respondent said that immediately after her marriage she conceived her first child. The earlier months of her pregnancy were fine. It was only during the later stage she complained of pain and discomfort for which she was taken to Barpeta civil hospital. After a sonogram they were told that there was water accumulated in her stomach and she had to undergo a surgery and should go to Guwahati for better treatment. Since it was not possible for them to immediately go to Guwahati her family admitted her in the Barpeta Civil hospital. She remembered being in tremendous pain and soon she was overshadowed with grief as the doctors had declared that it was not possible to save the unborn baby. She remembered while they were in the hospital they met a 'dai' who told them that she could be of help to them. The respondent said that 'dai' had offered to help her to take the water out but laid a condition that they would not inform the doctor as he would not approve to any traditional method. As the respondent was already in a state of desperation and her family was extremely tensed they did not think much about it and ready to take the dai's help. Without any kind of supervision from the doctor and any assistance from anyone she took out the water from the respondent's stomach through injection immediately after which she had labour pain and the doctor rushed to the scene to conduct her delivery. The baby could survive for only two hours. After the death of her first born, the respondent gave birth to another three children who also died in which two babies died after some hours of their birth and one was still born. While the pain and agony continued to haunt the lives of the family members, she again conceived for the fifth time. She remembered being extremely nervous and had gone through a lot of depression during the entire period of her pregnancy. The fear of losing the child along with the pain involved with complicated pregnancy was all she remembered. The family had made visits to the hospital after every fifteen days for follow-ups for months, which had added serious economic burden. As already

mentioned the respondent's husband was the only earner in the family. His income was very low and unstable, as he would get money only if he would go out for work. In such situations when there was extra expenditure on medical it was very difficult to manage the limited resources to meet the most basic requirements of the family which kept the atmosphere gloomy all the time and also it added more worries to the respondent as she felt responsible for all the economic burden to the family.

The respondent said that the delivery of the fifth child was also not easy. Her doctor had advised her to go for caesarean method instead of normal delivery. As soon as she entered the ninth month she was asked to get admitted in the hospital for the operation. In the meanwhile she already started having pains. She remembered that during her caesarean procedure she had some complications, which enhanced the pain even more. Lack of availability of medicines at that time had caused chaos and restlessness among the family members. Although the patient was in a sub-conscious state she could remember that the doctors and the hospital pharmacy did not have the essential medicines required at that time and asked her husband to buy it from other place. On the one hand she was losing her consciousness and on the other lack of medicines made the situation even more distressful. She recalled that the 'dai' who had earlier injected out the water from her stomach was also there at the time of operation had some argument with the doctor although she could not remember the context of the argument, had brought the medicines from somewhere and had given it to the doctor. The respondent however could not understand why the doctor who had conducted the operation had initially denied of availability of medicines in the hospital. The respondent said that when she recovered from the effect of anaesthesia she was informed about her baby. However when the respondent was asked if she had any knowledge about the causes of death of her other babies she said that she does not know exactly what were the causes but the doctor explained her in a simple way that 'the size of the bag which keeps the baby is smaller compared to her stomach'. Although all the deliveries were normal, none of it could survive after a point of time.

Photo 4. 1: The respondent's three years old son.



When asked about the availability and accessibility of health care services during her pregnancy, the respondent said that during her four pregnancies there were no ASHA in the village. She had taken medicines by consulting the pharmacist or the local doctor if she had any minor complications. It was only during the advance period of her pregnancy when she started complaining about different health issues that they consulted a gynaecologist. It was only when she became pregnant again for the fifth time there were ASHA workers who would monitor the pregnant women on regular basis and would provide support and information whenever required. Whatever the reason may have been, better accessibility to health worker's services or her luck that she delivered a healthy boy after so much of pain and disillusionment in her life. When her son was just two years old she conceived again. However in couple of weeks she had a miscarriage. The respondent recalled that it was during her initial month that one day she bled a lot. As soon as she was taken to the hospital she had to undergo the surgery for abortion.

#### c. Troubled Pregnancy during flood: A case from Pazarbhanga:

This is a case study of a woman who shared some of her experiences from the flood in the year 2012. She was seven month pregnant when the first big flood took place in the month of June 2012. Their house was located near the danger zones of river Brahmaputra. It should be noted that the researcher have used the term danger zone to the areas situated on the bank of the river or the agricultural land which are usually located on low lying areas. The respondent expressed her distressful experiences and also the trouble that she had to go through in her advance stages of pregnancy. She mentioned that she was suffering from some troubles and pain in her stomach. When a sonogram was taken it was found out that the position of the baby had changed and it was in a more difficult position, which had resulted in all these complications. In such situation when a woman had to take utmost care of her health the present respondent had to walk through shoulder length water in the middle of the night with her four year old son to save their lives from drowning. She recalled the particular night in the month of June when she and her family had lost everything, their house, assets everything was swept away by the fast currents of the water. She recalled while trying to come out as soon as the water started entering the house her son who was four years old at that time slipped and fell into the water. While her husband was trying to collect some clothes and utensils whatever he could grab at that moment she somehow got hold of her son and took him on her shoulders and walked in the floodwater towards the embankment, which was around 100 metres away from her house. They somehow managed a small thatched hut covered by plastics to protect from the rain. In one hand there was no one to take care of her and on the other her son fractured his leg when he fell into the water while trying to escape from the house. She said that initially they could not take him to the hospital as the mud roads, which connect the village to the other places, had been swept away by the flood. It was only after four days when the water receded little her husband took him to the medical college and hospital of Barpeta on his shoulders.

However, the respondent stressed immensely on the issue of difficulties in sanitation facilities during the flood season. There was no place for defecation. The water level had almost reached the level of the embankment, which created a frantic atmosphere among the people, as these people do not know where to go if the water surpasses the embankment level. There is a muddy road, which connects the embankment to the other village called Billortari, which is the adjacent village of Pazarbhanga. An NGO named

ADRA (The Adventist Development and Relief Agency) built insanitary latrines for the people living on the embankment area. The structure of the latrines was made from bamboo and cane wall. Approximately one insanitary latrine for 5 to 6 household was built near the embankment. She said that before these latrines were made they would defecate in the floodwater. It was very difficult for the women as the embankment was surrounded by people everywhere. Families of nearly 100 households were living in that approximately 500 meters long embankment. So the number of people living in that space considering its size is much higher which created lot of difficulties especially for women in terms of defecation and arrangement of drinking water and fuels for the requirements of the family. Moreover, the health condition of the respondent was fragile at that time and expressed that she was under great pain and it was impossible for her to go to the clinic or any hospital in such a grave situation. Lack of privacy had resulted in defecating problems since she would hold it as much as she could. And when she could not hold it any more she would defecate in the space that they lived in a plastic or a piece of paper and would throw the waste material into the flood water. This was not only the case with her but the other women who were living in the embankment had to go through similar kind of ignominy. No toilet, no food, no fuel, no proper clothing, no proper shelter and no proper source of potable drinking water. Since her health deteriorated, her husband would fetch water from the only hand-pump, which was located on the tip of the embankment.

Regarding health care facilities in the village in general she said that there is a subcentre, which is, situated around two kilometres from the embankment area. The ASHA of that particular ward in Pazarbhanga does not come for routine check-up and would only come for meetings in the sub-centre. That is why her family had requested the ASHA from Damalzar village, which is situated within the same block at the time of her pregnancy. She mentioned that the ASHA who was responsible for the embankment area of Pazarbhanaga village was hardly available for people's requirements. Since she had problematic pregnancy they had to arrange for the ASHA from the neighbourhood village so that they get some assistance at the time of her delivery. She was asked to take iron folic tablets and vitamin tablets which she got from the sub-centre at free of cost. Moreover, it is to be mentioned that it is already three years and the respondents family along with the other flood affected families still resides on the embankment area since every year after the mud dyke is washed away by the rising water level in the

river it gives rise to a flood situation. As a result of which for the families who are victims of this nature's wrath it becomes extremely difficult to resettle in other villages and hence they are still living in the same place for the last three years.

Although these families who had lost their houses have received a compensation of Rs.1 lakh from the state government to build new houses, however these people due to lack of land could not build one. Moreover, post flood also brings along lot other crisis like majority of the people had lost all their assets like clothes, furniture and utensils. So in such situation the responsibility of providing basic amenities to the family felt on the shoulders of the male members. Consequently all the decision making in aspects to the spending of the compensation money were entrusted on the male members leaving no scope for the female members for any say. Since majority of them are daily wage labourers, these people survive from their daily wage earnings. Every year the flood causes heavy pause on their work and so in their earnings as a result of which they had to suffice on the compensatory money for the basic requirements.

## d. Single geriatric female head with a daughter suffering from developmental disability: A case study in Majkuchi Village

The present study is an example to expose the reality of single geriatric female head in the rural areas in the Indian sub-continent. The respondent in this case is a geriatric woman in her late 70's who resides in one of the thatched hut walled by old torn rags and canes in the narrow lanes of Namakha area in Majkuchi village. As mentioned earlier Namakha is located in the interior most part of Majkuchi village dominated by the Scheduled Caste population. The lanes that leads to this part of the village is often avoided by the Upper caste population in the same village let alone health workers and other officials. As a result of which this corner of the village had not seen the light of development and as a result of which majority of the people are ignorant about what is happening outside their world.

The respondent who lives with her disabled daughter, has been disowned by her sons owing to joblessness and economic burden in their families. Even though all her sons live in the adjacent huts, they do not support or take care of their mother. The respondent said that her sons were ready to give her food to eat and keep her at their

places but they laid the condition that they do not want the responsibility of their disabled sister. The respondent said that her daughter who is in her 40's now couldn't perform any regular work by herself. Right from bathing to wear her clothes she needs some assistance. She said that her daughter is not even capable of cleaning herself during menstruation let alone understand or perform any activities including household chores. As a result of which none of her brothers and sister in laws were willing to keep her at their houses. The mother cannot leave her daughter as a result of which her sons have refused to extend any support. Most of the days she goes for begging to the nearby villages. There were times when due to illness or bad weather she could not go out for begging. Every time when such circumstances occur they had to live in starvation but no one came forward for any kind of support and assistance. She along with her daughter survives on whatever she earns on daily basis. She expressed that her biggest concern is what will happen to her daughter after her death. She is already very old and is not capable of doing any hard work and moreover she cannot even go to distant places to ask for alms. In such circumstances when there is nobody to take care of her and her daughter she forces her fragile and her wrecked body to walk miles for begging.

Photo 4.2: An old woman with developmental disabled daughter in village Nashatra



The respondent recalled that whenever, there is flood in the village or consistent rainfall for some days she is unable to go out for begging as the roads are soaked and becomes too muddy for the old lady to walk. They remain secluded in their huts and live without food and sometimes even without drinking water. She said that since her daughter is not capable to understand the threats of flood or her mother's inability to provide her food to eat in many occasions she would create problems like crying, urging to go out when there is water everywhere and at times becomes violent which makes it difficult for the old woman to control her in such situation. The researcher observed that even the surrounding areas is also not conducive for seeking any help or assistance as majority of the people belong to the economically deprived section and nobody has the capacity to offer any help in terms of money and food. This is just a particular case; there are other cases of abandonment of geriatric members in the study areas. The researcher has observed that lack of jobs and financial insecurity has resulted in majority of families especially in the rural areas to abandon their elderly parents. It has already been discussed before that the social environment of these study areas is such that they are not conducive for economic development or bringing familial stability as a result of which the repercussions are often felt on the weaker sections of the society the poor, disabled and the elderly people.

#### Conclusion:

Hence it is seen that the existing social order discriminates among different social groups in normal circumstances of life. So during disaster the power system of social order operates in such a way that disadvantaged people becomes more vulnerable. Women in normal circumstances in life face difficulties to access resources where the social norms determine their mobility and access to resources. This study is primarily an attempt to understand vulnerability from a gendered perspective and also to deal with some of the major health problems that surface during flood and non-flood situation. The study also reflects how the system has failed to provide the basic health care services to the needy. Records claims that the government has contributed considerably to the development of Reproductive and child health care, different programmes for the poor and marginalized and special schemes for the geriatrics. Every year they spend considerable amount of money for the development and welfare of the people. Irrespective of so much of investment and attention, the three villages Majkuchi, Nashatra and Pazarbhanga have not seen the ray of any improvement in their

lives. The darkness continues to prevail and so as discrimination and unequal distribution of resources among the different social groups in the villages. Hence it is important to understand the factors that influence the different vulnerable groups and how at the time of emergency despite of so much of discrepancies they try to overcome such difficulties. The next chapter discusses in details the different aspects of vulnerabilities with special emphasis on gendered vulnerabilities and also throws light on the indigenous coping mechanisms and interventions by the different agencies.

#### **CHAPTER FIVE**

### Different Aspects of Flood and Vulnerabilities: Gendered Perspective

Water is abundantly available, the geographical location of the villages is such that all of them are situated in a low lying area and heavy rainfall are the typical geographic characteristics of the study areas Majkuchi, Nashatra and Pazarbhanga. Still inadequate management of water resources and poor sanitation leading to poor living conditions is a common picture. Frequent contamination of the surface and ground water results in repeated outbreaks of the communicable diseases. The previous chapter has attempted to understand the access and availability of health service delivery by the people of the three villages during non-flood situation and after the occurrence of flood. As the previous chapter reveals about the different health problems caused by the contamination of drinking water sources and also how lack of proper sanitation facilities aggravates the health problems of the pregnant women and elderly people in the flood affected areas sets the background for this chapter to understand the different issues and vulnerabilities related to accessibility, availability and utilization of water and sanitation facilities..It also reflects the different aspects of vulnerabilities from gender dimensions as it was often observed that the vulnerability of men and women in context to their responsibilities, capacities and availability of options differ in kinds and scale according to their gender in flood or any disaster situation for that matter. This section also deals with the situation of flood, physical access to resources such as food, shelter and basic amenities like water and sanitation and would also explore how different social groups cope and resettle themselves during flood.

#### 5.1 Gendered Vulnerabilities During Flood: Excerpts from the Field

In all the three villages it was observed that the most important factor, which contributes to the risks and agonies of women is the prevailing higher rates of female poverty. It is quintessential to observe and analyze this social aspect of poverty, as this is the factor, which sets the ground for all kind of social vulnerabilities. The monsoon season and the recurrent flood takes place almost every year and the adverse situation lasts for months and in other times it do not last for more than a week depending upon the intensity of rainfall in the village. It becomes very difficult for the people to live in such adversities. As most of the houses in their village have floors made of mud, the

water easily breaks away the floors and creates havoc making the condition unimaginable for the people. So the villagers use wooden planks and bamboo to make a bridge to go to other rooms. There are also times when they have to sit on the bed for days until the water level subsides. In fact they have to elevate the height of their beds with bricks from all sides. They also keep a big bowl shaped iron or aluminum vessel, which is used to cook food during such situations. As majority of the people use chulha for the purpose of cooking, it is not possible to use the chulha whenever the water enters the house. They use the iron vessel to lite the wood for the preparation of their food. Since it is not a convenient option to prepare their food in this manner all the time, they usually prepare only once a day as there are also scarcity of rice at the time when there is water everywhere and mobility becomes difficult as a result of which they lack resources for food and fuel. So before the onset of monsoon they keep sufficient rice and lentils to last for the season and also dried wood to be used as fuel. Even though the villagers try to keep the fuel at an elevated place to save it from water ultimately it becomes damp due to the prevailing weather condition at that time. Changs (bamboo roof on stilts) are made during floods by men, after which all the work of looking after the family members, managing the cooking and cleaning is handled mainly by the woman in the household. Rafts/Bhels are used to transport people including patients to elevated location. In relief camps also, pregnant women, used to live together with other women. Before delivering the baby, most of these women admitted to doing household work and travelling by raft to the relief camps during floods. Some women used to take pride in the fact that they used to work normally during their pregnancy which is contrary to bed-rest prescribed by doctors. They tried to keep up with the nutritional requirements by eating fish and vegetables whatever was available; however fruits were not included in the diet. The firewood for cooking was generally collected by the other family members during flood time.

During rainy season it becomes very difficult for them to find dry wood. Rainy season has direct repercussions in the lives of the people. Not only its deep impact is felt during or in the aftermath of rainy season or flood, but during the course of the entire season people in the study area suffer immensely in all aspects of their lives. Their state of hopelessness reaches the peak when they actually have to buy wood for the purpose of fuel during this season. Majority of the people do not have space to store wood. Even though incessant rainfall and recurrent flood is a major problem in the low-

lying areas of Barpeta district, yet people face similar problems every year. In the following sub-section the researcher have attempted to describe the access, utilization and availability of water and sanitation in the three villages during flood and non-flood situation.



Photo 5.1 Flood Affected Areas of Pazarbhanga

# 5.2 Water and sanitation: Reflections on the access, availability and utilization of resources for different social groups.

The women are responsible for taking care of water and sanitation in majority of the households in the rural areas. So it is obvious on the part of the women that they understand the importance of water than any other members in the household. They understand that the water is the most important element of life without which life cannot sustain. However, despite of such importance, the condition of drinking water supply in Majkuchi, Nashatra and Pazarbhanga presents a very gloomy scenario. Most of the hand pumps in the villages are in a dilapidated condition. It is a disgrace on the part of the concerned departments of the state that there is no effort from their side for proper management and supply of potable water, supply to people in which majority of them belongs to the vulnerable impoverished sections.

Regarding water for drinking and other purposes people in Majkuchi village have to deal with lot of difficulties. For drinking and cooking purpose they drink water from the hand pumps. The iron content in water is very high in that area. As a result of which they have to filter the water before they could consume it. It is observed that majority of the people in Majkuchi do not have access to modern water filters. They still use the indigenous method of filtering water by using sand and pebbles in an iron box. Their water problem does not stop there. When the water level rises in the area, most of the hand pumps get submerged under the water as a result of which it gives rise to serious scarcity of potable water. The respondents said that whenever, any such problem occurs, the male members of the family use the raft to fetch water from the hand pumps, which are situated in a slightly higher area. They said that it is very difficult for the women to go and fetch water in such situation as the flow of water is rapid at times and also there is always fear of drowning. Although majority of the women knows swimming in the village since recurrent flood is a major problem in the area. Moreover two people have to go to fetch water as one has to control the 'bhel'/ raft and hold the utensil in which they have to carry the water and the other person have to hold the handle of the hand pump. In such situation it is very difficult to use water even for cooking and drinking purposes let alone other purposes like for cleaning and sanitation. The respondents said that there have been many instances in the past when someone in the family had suffered from diarrhea which gives rise to the state of desperation especially for women. Not only the problem of space occurs but also it creates immense problem to women in sanitation aspectsaspects, as there is insufficient water to keep them clean. Whenever they have to go for defecation, there should be some male member of the family who have to accompany them in the raft to go to an isolated place where they could defecate. In such situations their lives becomes an object of shame and ignominy.

Photo 5.2 An individually Owned Handpump used for Drinking Water Purpose



Although during the flood season there is major problem of potable water, it could still be fetched from the neighbouring households whose hand pumps are not submerged under water. But it becomes very difficult to find a place for defecation during flood. As majority of the households have 'kaccha toilet' (image of kaccha toilet see next page) they are easily washed away or damaged by the rising water level. Especially for women during menstruation the situation becomes more difficult. It is to be noted that in Assam, people consider menstruation to be polluted. Even in present there are many places within the state where women are restrained from doing any kind of household activities, they are not allowed to enter the kitchen or come near the religious places. They are not allowed to touch anything for three days, it's only on the third day after she washes all the clothes and takes a bath she can touch and enter the kitchen. As Vaishnavism is prominent among the people of Barpeta, they are staunch believers of the different norms and rituals under this religious sect. Majority of the Hindu dominated villages in Barpeta district are followers of the religious norms of Vaishnavism under which a women have to follow different norms and regulations in different phases of her life including maintaining isolation during menstruation.

Photo 5.3 Kaccha Toilet in Village Majkuchi



Process of purification after menstruation is an important norm under this religious belief. So whenever there is water scarcity or lack of bathroom or private space for the women to take bath, it is a matter of great inconvenience and taboo for many especially among those households where there are older family members. The respondents said that water could still be managed as whenever there is flood, people mostly bath and wash clothes in flood water. The respondents said that they are aware that they compromise with hygiene and sanitation in this process but they are helpless. In regular circumstances they bath in their neighbour's place or at times there are instances when they have bathed inside the house when the male members of the households are not around. However, during the period of their menstruation they do not bath inside the house. If the surrounding neighborhoods are also submerged under water, it becomes very difficult for them to bath. The respondents said that none of the women in their household uses sanitary pad. Instead they use old clothes as it becomes difficult for them to afford sanitary pads every month. After each use they wash these pieces of clothes and keep them for future use. In such situations when women have to change

the stained cloth, it becomes a difficult situation for them, as they have to put a lot of effort to walk through the water or even go by the raft. Each act of changing the stained cloth or defecation brings lot of difficulties to these women. In such situations the women consider themselves cursed and unfortunate to go through such pathetic conditions, as it is their lives are full of agonies caused by other factors like their socioeconomic conditions and their lack of access to the resources to meet the basic requirements.

A respondent from the village Majkuchi narrated her plight through such an incident about her daughter when she started her menstruation for the first time. The respondent recalled that the big flood which took place on 2012 lasted for nearly three months. The first event of flash flood occurred in the month of August, which lasted for nearly 17-20 days. In certain areas the intensity was more as these places are located near the riverbanks or surrounded by ponds. It is important to mention that not only the study area Namakha but also many of the places in Barpeta are surrounded by ponds and as a result of which these places are extremely flood prone. She said that the heavy flood, which occurred in 2014 had a profound impact in every aspects of the people's life residing in Namakha village. She recalled one such incident when their daughter attained puberty when the entire village was submerged under flood water. It is important to note that in Assam, especially in the lower Assam when girls attain puberty it is considered an important ritual in the family, as they believe the girl is going through a period of transition. There are certain cultural norms, which are meant to be strictly followed by the family members as it is considered very sacred. For the first initial days after the girl starts menstruating for the first time she is asked to live in a separate room and she is not allowed to see or contact any men. She is also not allowed to eat heavy meal. She is only given fruits, sprouts and water for four days. After all the rituals are over they organize a feast for the relatives and friends to mark the celebration of rites of passage in the girl's life. However going back to the respondent's case, she said that it was very difficult for them to follow the norms and perform the rituals as the entire village was submerged under the flood water. As the family holds only one room house it was even difficult for them to arrange a different space for the daughter to live for those days. Even though majority of the people are poor in the Namakha village, they are very concerned about certain rituals and

functions. In many cases the villagers lend money from the local moneylenders and also from the different women's Self Help Groups, which are present in the respective villages in order to celebrate the transition phase of their daughter's life. It was observed by the researcher that despite of being in economically very fragile situation, the villagers do not hesitate to organize a function even when they do not have sufficient resources to meet their basic requirements. However these people are bounded by the different socially constructed obligations of fulfilling these rituals and as a result of which they exhaust all their savings and assets.

The respondent said that they are used to bath outside the house near the hand pump. She said it is almost impossible to sustain with the little money that her husband earns and is not even sufficient for the basic amenities like food and clothes let alone toilets, bathrooms and individual water sources. She expressed her plight when she spoke about her daughter's difficulty during menstruation. She is a young girl and finds it difficult to change her clothes or bath in open during menstruations. As already mentioned earlier, they live in a one-room house, which does not have any space to use for bathing and maintain privacy. So every time they go for a bath they have to be careful and would hide themselves or cover up if they see anybody passing. So whenever they have to change the stained clothes used during menstruation it is a major concern as there would be either male family members in the house or any other men doing some chore outside the house. However, the respondent said that they never felt any threat or heard any lewd comments from the passer byes. Despite of this they always live a life of shame and ignominy. They do not have a sanitary latrine. Until last monsoon they had insanitary latrine, which was washed away during flood. Initially it was covered by walls made of bamboo sticks, which was flowed away by the water as a result of which they have tied pieces of clothes and rugs from all sides. She said that they are not in a position to repair the latrine because of lack of money and she often complains to her husband about the bad smell that comes from the opening of the tank. The tank is mostly kept open due to lack of proper cover as a result of which it exudes very bad smell that causes inconvenience to the people. She said that the tank is quite deep which has prevented the waste materials from over flowing so far, but she feared that if there would be flood again the waste materials would flow with the water, which would pollute the entire surroundings-giving rise to scarcity of potable water.

The researcher raised certain issues to the female respondents in all the three villages concerning being a woman what are the problems that they faces the most other than lack of toilets or difficulty in fetching water. To this the researcher have penned down some common perceptions regarding this, often neglected issues from the respondents of Nashatra and Majkuchi that being a woman and a mother, how they have to compromise on lot of things. Even if they suffer from any health problems irrespective of its intensity, which make their body fragile, still have to carry out activities like fetching water from the neighbour's and collecting wood from the surrounding areas to be used as fuel. These kinds of works invite more difficulties in terms of more labour and more time when the weather is not conducive. They expressed that had there been hand pumps of their own in their compound and if their husbands help them to gather wood for the fuel, many of her problems and difficulties would be solved. Since it is always the women, who are responsible for fetching water irrespective of any weather condition be it rainy, summer or winter and also for cooking in such adverse situations in the absence of a kitchen or a different space for the purpose of cooking it becomes very hard for them. They expressed that especially during rainy season it is difficult to find dry wood. With one small room and as many as 4 to 5 people to live in, they do not even have a small space to keep dry woods to be used at the time of emergency like rainy and flood season.

The situation in Nashatra is almost similar to Namakha and Majkuchi village. As mentioned earlier in the previous chapter the geographical location of the village is such that whenever, there is incessant rainfall the entire village becomes flooded giving rise to absolute poverty and damage of infrastructure and basic resources. Regarding availability and accessibility of water, majority of the respondents said that they did not have hand pumps or private wells and apparently have to carry water from their neighborhoods for every purposes. Right from cooking, cleaning and washing these people uses hand pumps, located near the primary school, Namghar premise or from houses situated on elevated areas, which not only is stressful but also makes their lives difficult and disrespectful. Since women are entrusted with the responsibility of water and sanitation in the family, it is considered their problem as to how to manage water irrespective of non-conducive weather and geographical condition. It was strongly observed that the patriarchal set up in the family prevents the male members from offering help or support to fetch water, even when there is any kind of environmental

hazards or natural calamity. There is no age bar even when it comes to fulfillment of responsibilities in terms of women.

It is observed that the social condition of Nashatra is not conducive for any kind of development. Apart from the recurrent flood that almost takes place every year another reason which stands as a hurdle in the well round development of resources is the different illegal and socially unacceptable behaviour of males in the village Nashatra. Lack of proper education or any kind of vocational training of people have resulted in acute unemployment problem, which has a direct implication on the economic condition of the people, which eventually results in disturbed behavior of majority of male members in the family. Consequently the repercussions of the outrage have to be mostly borne by the women in the form of compromised living and domestic violence. One of the respondent who is also an activist and work for the ban of local liquor sold openly in the village mentioned that she along with couple of other women in the villages who had suffered severe atrocities and violence from their alcoholic husbands complained to the local police against all the liquor vendors in order to bring a stop to this. However, in this pursuit she had to face many problems and difficulties as the local liquor vendors started threatening her and her family as they had to stop the illegal business due to the pressure from the police and as a result of which the people were mostly raged against the respondent and pressure was also put on the women who helped her. The respondent mentioned that the ban in the selling of liquor and gambling openly was temporary. This situation had caused so much anger in them that they expressed their anger on their wives and children in the form of physical violence, abusive behaviour and did not provide them the basic requirements like food. Consequently in order to escape from such mental trauma and violence caused by their husbands their wives started selling liquor from their houses to earn some money in the hope that it would improve the condition of home. This social aspect of the village is very essential to observe in order to have a proper understanding of the pitiable condition of women. In this kind of circumstances when the women do not have accessibility to most primary requirements like food and shelter, the question of demanding a hand pump within the household premise seems like distant dream for these women. Majority of the women said that it is not that they do not want their own water resources. But considering their present economic condition it takes so much to meet the immediate requirements like food, clothes and health care that it has never

been feasible for these people to set their own hand pumps or well. Some of the respondents said that during non-flood season it is not difficult for them to fetch water, as they would take water from their neighbour's household for the sake of drinking and cooking purpose. Household quarrels, fights regarding petty issues have become part of their lives. At times if a fight breaks out between the families of two houses they refuse to allow people to take water from their hand pumps. It becomes little difficult for the women, as they might have to walk far and carry water to meet everyone's requirement. They said difficulty arises especially during the flood season. As the village is situated next to river Nakhanda it is very prone to flood. Often incessant rainfall results in flood type situation, which results in even more labour for the women. The pain and trouble the women take to carry two buckets of water during flood is beyond comprehension for other people who have not experienced such problems. Since it was not feasible for the researcher to carry fieldwork at the time of flood, a visit immediately after the flood season was made in order to understand the intensities of the pitiable condition of the people. The researcher observed that most of the mud structured houses in the village had been almost destroyed, in some the tin roofs were blown away by the wind and the rain and the mud roads which connects the village to other places had been eroded causing difficulties for the people to gauge the danger zone. While discussing how these women manage to carry water in no road condition, one of the respondents mentioned her experiences during the last flood. She is a woman in her 50's. She narrated that,

'At the time of flood most of the hand pumps near her house were submerged under the water. Since she was the only female member in her house, she had no choice but to arrange water for drinking and cooking facilities. She said that for few days the current of the water was very fast and it was very difficult to walk in such fast flowing water as it can sweep away anyone. Although majority of the women knows how to swim in Nashatra, with such fast current of water it was very difficult to cope especially for women with the kind of attire they wear it is difficult to manage. While walking through the necked deep water, the respondent was caught up with the fast current and fell deep into the water. In the process the respondent got hurt as she fell on a big boulder of stone, which caused many bruises, a sprained back and a ligament injury. Although she knew how to swim she was not in a position due to pain and shock. A couple of young boys on seeing her drowning saved her life and carried the respondent to her house. In

such a situation when the entire area was flooded with water and nobody to take care of the respondent it was a traumatic experience for her. Although her husband was around it was very embarrassing and culturally unacceptable to ask the husband to throw her stool and urine outside as she was not in a position to stand and manage herself.'

This is just one incident, there are many such incidences which takes place every time there is flood due to lack of proper infrastructure. These recurrent floods have resulted in continuous trauma in people's lives and moreover, the socio-economic condition of the study area is such that it is not conducive for even improvement of the basic amenities like proper potable water sources and toilet facilities.

In the village Pazarbhanga, the major floods have started occurring since 2004, after which there was a brief period of lull, until 2012 when floods came raging again and eroded some portions of the village little by little. In the succeeding two years as well there were floods in the village. The most destruction and loss of property occurred in 2012. Most people who were previously self-sufficient have slipped in to poverty since the flood. In spite of recurring floods, there is no pre-warning of floods until now. People resort to the embankments only after floods occurs, which have withstood floods. Most people are aware of need for water filtration. They drink stone filtered or hard-boiled water. However the reality is, in Pazarbhanga 82 % of the total population do not have access to any kind of toilets. Pazarbhanga village lack far behind rest of the two villages, in the context of having pit toilets with mere 17.6 percent households having them. The major problem of this village is of space, as the houses do not have space to even construct a small pit toilet there is no other option for families other than open defecation. In such situation it is difficult to maintain hygiene and cleanliness. It is already known that after the flood in the year 2012 most of the families live in the mudded embankment. As the frequent erosion and flood had swept away most of people's land these families who inherited at least 2-3 bighas of land are left landless. Although the government had offered them some compensation this money is spent in the process of rehabilitation. A respondent recalled her experiences and said that,

'We do not own a bhel /raft, so every time we have to relieve ourselves, we have to wade through the flood waters and look for a suitable spot. Since my husband and I are the only ones left at home, as we send away the children during floods, we get up on the

chaang which is outside and relieve ourselves- since it is not possible to go out into the flood water every time. A raised plank is set up so that we can climb up and down to reach the chaang'.

It was observed that particularly women with compromised mobility like pregnant women, old women and women who are menstruating at the time of flood it was difficult to go for defecation or even for urinate as there were no latrines. They had to come down from the embankment to the riverbank to defecate in the open. It is very scary to this every time they have to defecate or urinate, because the river flows is turbulent currents during floods and there is associated fear of being swept away by the swift of waters. Hence this reflects the myriad of difficulties that the majority of people in Pazarbhanga have to go through. The health service providers in the village like the ASHA and the ANM said that the people are aware of the importance of hygiene and cleanliness. But the economic condition of the people put constraints to such an extent that they cannot even imagine to afford them. Just aftermath the flood in 2014 when the researcher visited the village majority of the families expressed that what is most desirable at the moment is a shelter in which they could prevent themselves from the continuous rainfall and food to stay alive. Especially immediately after the flood it is observed that these people are deprived of even the most basic amenities.

#### 5.3 Access to Water sources and Toilets among Different Social Groups:

Table 5.1 Access to water sources among different social groups

		Social group				
Access to source	o water among	Schedule	Other Backward	Upper	Caste not	
different social groups		caste	Class	caste	specified	Total
Hand	Total	100	86	73	2	261
pump	% within	52.6%	51.8%	89.0%	50.0%	59.1%
within	Social					
Household	group					
Hand	Total	84	80	9	0	173
pump	% within	44.2%	48.2%	11.0%	0.0%	39.1%
within 500	Social					
mtrs from	group					
the						
household						
Hand	Total	3	0	0	2	5
pump	% within	1.6%	0.0%	0.0%	50.0%	1.1%
within 500	Social					
to 1000	group					
mtrs of						
household						
Handpump	Total	3	0	0	0	3
more than	% within	1.6%	0.0%	0.0%	0.0%	.7%
1 KM	Social					
from the	group					
household	T-4-1	100	166	92	4	142
Total	Total	190	166	82	100.00/	442
	% within	100.0%	100.0%	100.0%	100.0%	100.0%
	Social					
	group					

Source: primary data collected during field work in 2014

Among the three social groups found in the study area, the SC, OBC and the upper caste households' majority of the upper caste households have water sources located in their housing premises. These houses are located in Majkuchi village while the SC and OBC women has to travel at least half a kilometer to fetch water from the hand pumps in the neighbourhood. In the under developed society itself the most marginalised seems to be sharing water resources and thereby putting more efforts to cater to their basic needs. As women are primarily responsible for arranging water for all

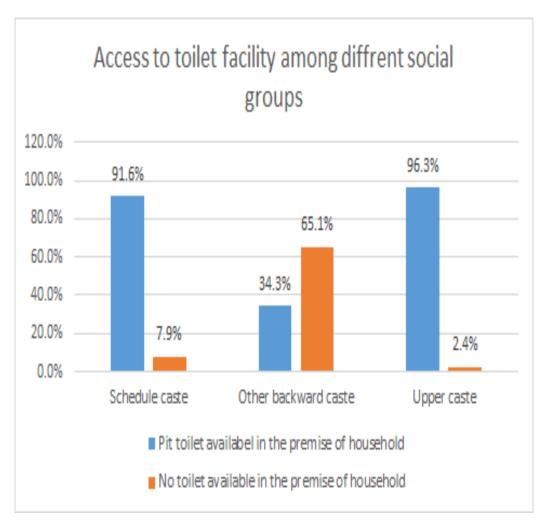
requirements of the family the upper caste women seems to be better off. Fetching water itself is a laborious task and that too from hand pump which requires more labour. The situation and access to water resources indicates that although water is available for all communities it is not that simple for SC and OBC to meet their water requirements. Almost all the lower caste women faces same kind of pitiable fate as they spend almost quite a substantial amount of their time in collecting water from other sources and managing other household activities. They do not get any chance to engage in any kind of job so that they can contribute to the household expenditures.

In Majkuchi and Nashatra majority of the lower caste women mentioned that they do not own land and money to build a toilet. These women are always engaged in doing household activities like collecting water from the different sources and looking after the family. Since it has already been mentioned in one of the sub-sections that women do not have any role in the decision making as they are always engaged in household chores and do not get time to work outside their houses not even as a labourer. Moreover due to non-availability of water, these women are not very interested in public toilets constructed by the State Public Health Department. The condition of OBC in Majkuchi and Pazarbhanga is not different from the SC population in the study area. In Table 4.2 it shows that only 51 % of the total OBC population have access to their own water sources. The rest of the people from this community have to walk at least 100-500 metres to carry water to meet the requirement of the family. With only 51 % of the household among OBC group having access to their own water sources is something to be concerned about. Moreover previous data shows that majority of the OBC population belongs to the marginalized section of the study area, which are extremely vulnerable from the recurrent flood. In such circumstances a detailed understanding of their experiences filled with trauma and agony would certainly throw light on the study of social dimensions on water and sanitation in the rural areas of India and how the different social groups have different access to water sources and toilet.

Again majority of the upper caste households in the Majkuchi village mentioned that they use their own hand pumps. In certain cases it was found that three to four families live in one compound. Usually these families are either brothers or related by kin. In such circumstances they pool money and make arrangement for own water source as a result of which they do not have to worry about travelling far to collect water. Although

access to safe drinking water is difficult for all the social groups in the study area, the women in upper caste households are in a much better condition in terms of accessibility and availability of water supply.

Figure 5.1 Access to Toilet Facility Among Different Social Groups in the Three Villages



In Figure 5.1 it shows that 91.6% of the Scheduled Caste population have access to pit toilets within the household whereas the rest of the 7.9% do not have any kind of toilets. Although majority of the SC households have access to the pit toilets it is observed that majority of them are in dilapidated position or despite of having toilets people go for open defecation due to lack of maintenance of these toilets. However this kind of situation is mostly observed in Namakha area, which is a SC dominated cluster

under the village Majkuchi. The Upper caste households in the study area have better access to toilets with 96.3% while the condition of OBC households is extremely poor. The above figure shows that only 34.3% of the total OBC households have access to pit toilets.

In the next section the researcher have reflected on some of the issues which makes women more vulnerable in the rural poor and disaster affected areas. Even literature based on gender and disaster studies in India have thrown light on some of the factors which prevents women from engaging in any kind of mitigating measures and policies initiated by the government, the rigid gender roles constructed by the patriarchal society and lack of awareness and access to basic education have forced them to submerge under the irreversible condition of poverty and vulnerability. However in the course of identifying and understanding these broader issues the researcher have observed some of the disturbing facts that has evolved from the research areas which are power of decision making among women in important household affairs especially at the time of crisis caused from situation like flood, their knowledge about political and economic entitlements, awareness regarding the existing government programs in the villages, education of women and availability of health care services. Special emphasis has been laid on the women with compromised mobility like women who were pregnant or had delivered during flood and also different problems associated with geriatric women. As mentioned earlier these are some of the factors, which contributes to the vulnerability to the already weaker section of the society.

#### 5.4 Role of Women in Decision-Making:

Across the globe, it is observed that lack of access to clean drinking water and energy, environment degradation and disasters have strong implications for the health of women. In fact in the developing world where millions of people lack clean water and adequate sanitation, it is the women who are responsible to arrange for water in the house. Despite their numbers and roles in the family, women most of the time have no voice in the decision making of the services like water supply, sanitation and health which are provided for the protection of the family (Gross, 1998).

It was observed that in all the three villages women are mostly entrusted upon doing only household chores. Especially in terms of fetching water from the neighborhood's or from their own hand pumps for all kind of requirements for the family and

maintaining cleanliness women have always performed their responsibilities irrespective of any kind of environmental hazards. Despite a life filled with such hardships they are deprived from the right of decision making at home. The women respondents in all the villages said that they are abide by the cultural norm which gives male members the edge for all the decision making power. However it is interesting to note that women, despite of taking so much of pain in arranging the basic amenities of life, men fails to understand the inconvenience associated in arrangement of water from distant places particularly during flood as the respondents mentioned that the hand pumps in most of the households are submerged whenever the water level rises. The rest of the households do not have any kind of water resources. In such circumstances the female respondents said that even when they demand for a hand pump the male members of the family who are also the only income source do not pay any heed to their requirements as they are not responsible for fetching water for the need of the family and since they do not feel the brunt of arranging water themselves including in adverse situation most of the time they do not care for the source from where the water comes for the family. This phenomenon also throws light on the objective of development from different gender perspectives. This aspect of gender perspectives with respect to development process have been also emphasized by the renowned environmentalist Vandana Shiva in context to the Chipko Movement. Vandana Shiva argues that in movements like Chipko, two different world views of the Indian society are reflected. One of them is the masculine perspective which she also refers to as the destroyer of life in context to the commercial forestry system, which considers forest as a resource to be exploited for money. The other is the feminine life conserving principle of forest as the diverse and self-reproducing systems (Shiva, 1988). In respect to the problem of drinking water, Vandana Shiva critiqued the 'National Master Plan for India for the International Drinking Water Supply Decade (1981-1990) as the plan had emphasized on everything but water and without looking at the indigenous situation it had adopted the western model of water supply system which had consequently resulted in failure. Moreover the western male consultants who are responsible for developing water purification technologies for the small communities especially in the third world countries are insensitive to the gender norms. These projects are mostly centralized and capital intensive and they are technologically not suitable always. On the contrary the indigenous technologies used by the Third world women are decentralised, low cost and mechanical (ibid, 1988). It is very essential to understand that though in the western countries the management of water supply is held in the hands of men but in tropical or rural areas of the developing countries, it is the women who are responsible for generating safe drinking water through traditional ways (ibid cited in Pathak, 2011)<sup>5</sup>. Again in reference to Vandana Shiva's feminist perspective on the issue Gabriel Dietrich is critical about the absence of the role of culture in this regard. Dietrich argues that an ecologically sustaining system is perfectly compatible with a hierarchical and patriarchal society that is based on caste division of labour, and this is in fact what obtained in pre-capitalist Indian society (Dietrich, 1999). However the feminist writers largely dwell on the relationship between class and patriarchy. The very notion of the existence of patriarchy itself suggest the position of women as inferior to that of men and it eventually creates a class within a class. In the Indian context as well as in the other developing countries, men holds the production system which are directly profit oriented and the women engage themselves in the security of the environment. Bina Agarwal also observes that the gender-class effects have implications for certain aspects like time, income, nutrition, health, social survival networks and indigenous knowledge which are very important in places like rural India (Agarwal, 1999). People from Majkuchi especially women from the upper caste households and also women from Nashatra are staunch followers of the norms and rituals established by the Satras<sup>6</sup>. The principles of both Damodar deva<sup>7</sup> and Sankar deva<sup>8</sup> Satra strictly advocate the norm that all married and young women should bath after defecation. They neither touch anything nor do they enter the main house without bathing. However such norms are not imposed on men as a result of which, they do not understand the necessity of a private place for the purpose of bathing and defecating. It is observed that the Satras in Barpeta have significant role in influencing the people about the concept of purity and pollution. As per the religious norms, it is necessary to bath before any religious

<sup>&</sup>lt;sup>5</sup> Cited in Panchi Pathak's unpublished M. Phil dissertation submitted in Centre of Social Medicine and Community Health/School of Social Sciences, 2011).

<sup>&</sup>lt;sup>6</sup> Satra- A Vaishnavite establishment which is generally known as traditional religious institutions or monasteries.

<sup>&</sup>lt;sup>7</sup> Damodar Deva- He was also a sixteenth century religious reformist and a contemporary of Shrimanta Sankardeva.

<sup>&</sup>lt;sup>8</sup> Shrimanta Sankardeva (1449-1559)- He was a Vaishnavite reformer in the 16<sup>th</sup> century mediaeval Assam. It was he who brought Vaishnavism to Assam. Considered as the most important religious leader among the followers of Vaishnavism.

activities. A person should not enter the 'Namghar9' premise without taking bath after defecation. It is same in case of kitchen also, as preparation for any religious ritual takes place in the kitchen. These norms are seen to be more rigid among women than men. Since the time of attainment of puberty it is strictly imbibed among the girls that they should bath after each act of defecation. So in such circumstances when the water level rises, everywhere it becomes very difficult for the people to follow such norms which, results in a state of helplessness among the women as the sense of purity and pollution is an important part of their lives. Women, old people and the children have to go to the fields covered by bamboo trees and other distant places for defecation. Even during menstruation period for the women, the problem and agonies rises leaving them in the state of ignominy. Insufficient water supply also makes life distressful in normal circumstances. So at the time of flood their state is beyond despair and as their problems aggravates in such situations it is the women who suffer the most. As the men do not face such problems, they cannot gauge the intensity of the problems of women. In normal situation when there is no rain or flood, the respondent said that they do not face such difficulties. The male members of the family go out for work and bring money to support the family. The carpenter or mason they earn up to Rs.200-300 per day. They work for four to five days in a week and sometimes they stay at home if they do not find any job. Consequently the income, which comes to the household is not stable as a result of which it becomes difficult to save money for any kind of adversities.

Again shortage of food is a major concern during flood. There were instances when there was dearth of food for the children. In such situations the male members of the family would go out and try to borrow some money from another household member. At times they would bring Rs.200 or at times only Rs.100. The respondent said that they cannot blame the people for giving lesser amounts or unable to help others financially as majority of the people living in this area live under extreme poverty. So whenever such calamity struck, everyone suffer. Despite of their own pathetic condition they try to help their friends, relatives and their neighbors with whatever little money they could afford. But in a village where majority of the people live in absolute poverty there are very few households who remain in a position to lend money. The respondent said that food bought from this money last for only a day or sometimes two depending

<sup>&</sup>lt;sup>9</sup> A part of Satra. It is basically a village religious institution.

on the number of the people living under the one roof. So with no steady income in the family, the members spend days without food including the children.

The above description reflects that the power of decision-making does not entrust the male members with only decisions regarding family but it also entrusted the male members with the power to take economic decisions as well. Majority of the women in Majkuchi and Nashatra village are housewives. There is no effort or any inclination on the part of the women to take up any work, as they believe it is the duty of men to provide them with food and shelter and their task is to take care of the family and home which is usually a common practice in any patriarchal society. Nonetheless at the time of flood also it is the men who take all the decisions, as they are aware that it's them who contribute to the economy of the family.

In Pazarbhanga village it was observed that most girls are married off at a very early age, which results in early pregnancy and eventually the responsibility of children and family fall onto their shoulders from a very young age. The respondents in Pazarbhanga said that their ancestors have followed this pattern, so it has become a practice among Muslim families. But since couple of years the practice of early marriage have come down compared to the last decade, as influence and awareness programmes conducted by the health care providers, literacy level among girl child and also the growing awareness among the people regarding government intervention to ban early marriage have increased among the Muslim communities in Pazarbhanga village. Despite of government intervention and realization of the demerits of early marriage there are still many households especially near the embankment area where the families get their daughters married at a tender age owing to the superstitious beliefs, conservative approach and most importantly the socio-economic condition of the households have a large impact in practicing early marriages. Even in affairs dwelling with socio-cultural practices in the family, the male members of the family make majority of the decisions. In the presence of an elderly member or male members in the family the opinion of the female members are never asked or engross them in any kind of decision making affairs. It is only in the absence of male members do they enjoy the right of decision making at home.

However, the female respondents have expressed that after the major flood had struck Pazarbhanga village majority of the male members of the family had shifted to mostly Guwahati or Shillong in search of job. The researcher have observed that as a result of migration of the male members, there are many households in Pazarbhanga which is headed by the female members of the family in their absence. Otherwise the status of women in Muslim dominated households especially the ones living in the embankment area is very low or negligible. Their conservative society usually do not allow girls to be more articulate as most of the time they are refrained from their basic rights and freedom, whether it is freedom of expression by restraining them from pursuing higher education. Even though women are given the entitlement of decision-making in female headed households majority of these decisions involves in basic requirements and amenities. Most of the time their wishes and demands are fulfilled when the male members of the family comes home with their earnings and eventually as soon as the male member is in a position to spend money for any household requirements the power of taking decisions automatically goes to their hands. Hence the power of decision-making among the Muslim women of Pazarbhanga is temporary and could be only exercised in the absence of their spouses and other male members in the household.

## 5.5 Low Literacy Level Among Women in the Study Area:

Education is an important constituent, which influence the overall development of an area. It is one of the most important determinants of empowering communities to equitable and optimum use of resources. It is the education, which enables people to reason and understand the diversities and complexities of any culture and eventually determines the cultural practices of people. Especially in a flood prone area like the rural areas of Barpeta district education could play a pivotal role in reducing the gap between the different social groups which would enable better distribution, access and utilization of important resources and basic amenities like food, shelter and health care service.

Absence of a primary level school in the village Majkuchi have caused extreme inconvenience to the people as a result of which it has resulted in dropouts from school, which is situated in the neighboring village and many of the children who are supposed to be in the school are found loitering in the village during school time. In some cases

the children are accompanied by some elderly person to school who would drop them and take them back. It is not always convenient for the parents to accompany the children, as they have to go for work or perform their regular chores. The nearest primary school is located in Patbousi village which is 2 Km away from Majkuchi village. But due to fear and insecurity the parents are not comfortable with the idea of sending their children alone if they are not in groups. Moreover there are very few households in the village who could afford to send their children to Barpeta town for schooling <sup>10</sup>

In such circumstances it is not only the matter of money but also non-availability of conveyance is also a major constraint. Apart from lack of primary school in the village there are also other factors, which also determine the number of enrolment of children in the primary schools in the neighboring village. Among all, the economic condition of the people in Majkuchi, especially in the Namakha area is very low. However, the most important difficulty is the ability to afford the cost of educating their children in a situation, where the families are always in a vulnerable condition to even manage the basic requirements of the family like food and shelter. The problem does not only end till primary education of the child. The nearest high school is also situated in Patbousi village, which is at a distance of 3 to 4 Km. Higher education is a matter of serious concern for the people. Especially for the girls it is a serious problem as the parents are not very keen on sending their daughters to distant schools even for high school level. Some of the respondents said that they fear that the boys might tease their girls or they might suffer from any kind of harassment while travelling every day and other problems like mode of transport, tuition fees and fear of having love affairs and bringing disgrace to the family. In most of the cases families do not encourage higher education for girls as the family either marries off their daughters at a young age or they elope. From a very young age girls are trained to help their mothers in household chores. Eventually the number of dropouts from school for girls is more than the boys. There are very few female respondents who had completed twelve years of education. To complete high school education especially for girls in the study area is a major achievement. Despite of acquiring higher education the female respondents mentioned that they are not able to bring much changes in the social condition of the family. The

<sup>&</sup>lt;sup>10</sup> Cited in Panchi Pathak's unpublished M. Phil dissertation submitted in the Centre of Social Medicine and Community Health/School of Social System, 2011.

researcher has narrated an excerpt from her fieldwork about one of the very few female respondents who had completed high school education. She is 30 years old from an upper caste Hindu household from the village Majkuchi. As the researcher have narrated,

'The respondent, who is a 12th pass, does tuitions to bear her own expenses. The amount she charges is nominal as compared to the time and service she delivers to her students. She teaches 3-4 students for one hour each for five days a week. In return she gets only Rs. 250 from each student, which is very less as compared to the amount of labour, she puts in them. When the researcher asked if the families of these children pay the tuition fees regularly, she said that many times they don't pay the fees for 2-3 months. If she would not ask for it, they would not give the money. The condition of these people is also deplorable, somehow they manage money for two square meals a day and emergency health issues. In such situations it is not always feasible for the family of these children to bear the tuition fees. When asked if she is looking into other options and opportunities she said that she was offered to teach in a private school in the next village. She did not take up the job as she would have to spend the whole day in the school and the pay is also very less'.

While talking about the importance of education of women in the village another respondent from the village Majkuchi shared her experiences about her elder sister. The respondent mentioned that her sister is around 34 years old and unmarried. It is a major concern for the family, as ideally she should have been married already. She mentioned that her elder sister is illiterate, as she has never gone to school. Due to financial constraints and lack of knowledge about the importance of education their parents have never put any emphasize on education. As the only income source of the family at that time was their father, their mother was responsible for weaving clothes and grazing the cows in the surrounding fields. As a result of which the elder daughter had to take care of the kitchen and the younger daughter, as a result of which she never got an opportunity to go to the school. Apart from looking after household chores and weaving she do not have any other knowledge. The respondent said that nowadays even an unemployed or an unskilled labourer also seek for a girl who has completed at least primary level education. As a result of which they are finding it very difficult to find a suitor for her. They are also concerned about her age. As she is aging her chances of

getting married is becoming even thinner. It's only when they get a suitor for the elder daughter their worries will be lessened. She said regarding education for girl child, the scenario is changing now. In the present context majority of the families in the Majkuchi village understand the importance of education. She said that if the children refused to go to the school the mother's forcefully take them to the school. She is hopeful that such attitude among the people will help to bring changes in the society, as she strongly believes education is essential for development in the society. However, in this regard the researcher had observed that though the enrollment of girl child in the high school may have increased but the number of dropouts cannot be ignored. It was observed especially in Majkuchi and Nashatra that education among the girls is encouraged also because they believe it involves better marriage prospective for the young girls who are literate. The reason for such an assumption is the percentage of people who have done 10 years of schooling or more is very less (see Table 5.2). Especially among girls the percentage is even lesser. Since majority of the people are from marginalized background they are unable to spend more money on their daughter's wedding and in many cases their daughter's remain single for life. In the course of the fieldwork the researcher have come across 3 male respondents between the age group of 45 to 60 years who expressed the agony and ignominy associated with inability to give their daughter's in marriage due to scarcity of finance and other resources. It is essential to note that although the system of dowry is not prevalent in Assamese society, however, at the time of marriage the girl's family sends some gifts depending upon their financial capacity. Failing to gift even basic things like clothes, utensils and a reception for the groom's side brings disgrace to their family. So in such circumstances educating the girls might be incentive for better marriage prospects. There is no denial that the people in these two villages are aware of education. But as mentioned earlier the social condition of the people is such that they are deprived of even primary education. Say it or not, no development schemes and policies have been able to achieve the level of progress in the education sector in these villages due to which lack of awareness and poverty prevails which multiplies their vulnerability at the occurrence of flood. It is often observed that in such situations it is the women or women headed households who suffers the most.

In Pazarbhanga the situation is even more disturbing. As mentioned earlier that it is one of the worst flood affected villages in the Barpeta district. Due to recurrent flood every year the environment is not conducive for children to pursue their schooling. Consequently the overall education of the children suffers. This is true for both boys and girls. As one of the respondents mentioned that,

'We are periodically hounded by floods. In such a scenario various hindrances to schooling are faced. Most schools are submerged under water during the rainy season owing to floods. Six months in a year goes waste because of floods. Neither are teachers able to teach during this period in other locations due to practical in capabilities'. Since majority of the places are drowned under flood water it becomes impossible for the teachers or the students to shift their classrooms to other places in the village. Consequently it is the students who suffers immensely due to lack of proper structure for school. As a result education of the students are highly affected and so far there has not been any effort from the state or the local government for the improvement of school structures and long term flood mitigating measures.

The researcher observed that the very location of the village is such that, whenever there is continuous rainfall for a week, especially during the months from June to September the riverbank also gives away. Geographically Pazarbhanga is situated on the bank of river Brahmaputra. After the 2012 flood, which caused heavy destruction throughout Assam, it badly affected the areas, which are situated in low-lying area and close to the river. Consequently the rising water level and the fast current eroded away almost a substantial part of the village. It is difficult to believe but more than half the land surface of the village submerged under the riverbed. Creating a situation of havoc and distress among the people it made an irreversible mark on the lives of the people who lost all their assets and belongings in front of their eyes within a night let alone the mental trauma and physical distress caused to the people. The raging river killed six people including a child. Houses were destroyed. Agricultural lands were swept away by the flood and countless cattle were killed. In such situation all the structures and buildings came under the water including one primary and the other lower primary school. The constructions of the schools are poor as compared to other government schools in the other villages. It is to be noted that in most of the places in the district the schools are constructed in elevated places so that at the time of such calamities these

concrete constructions could give shelter to the needy and the vulnerable whose houses are either half drowned or have completely destroyed. In Pazarbhanga however people could not avail this safety shelter as the schools are also drowned when the water level crossed the danger level.

This backdrop of the situation of the village at the time of flood is essential to note as it has a great repercussion on the social lives of the people. The respondents said that half of the year goes into waste due to flood every year. In order to cope up and resettle themselves it takes time as a result of which people do not put emphasis even on education. The school remains closed for 3 to 4 months. Since the teachers are also from the same village, so whenever the flood occur their families are also affected and eventually there is long absenteeism from the teachers since they have to take care and support their families in this moment of despair. One of the respondents from the Pazarbhanga village who is also a teacher in the primary school expressed the amount of crisis that surrounds the people's lives whenever such catastrophe takes place. He mentioned that his house was damaged by the floodwater as it was situated near the mudded dyke on the side of Brahmaputra. The dyke which was meant to keep the water away from the habitations was washed away by the fast currents and eventually within fragments of seconds the entire village was flooded with water. He said that the flood of 2012 was the worst in many years as it has not only washed people's land and houses but also lasted for a long time for almost three months. The teacher along with his family had to escape to the main road and witnessed the destruction that took place throughout the village. Since 2012 they have been living in a tiny mudded and straw hut. In fact majority of the residents of the village has to live under such situation since the occurrence of the raging flood that not only shook the people's lives but also shattered their dreams of a better life for a long time. Although the teacher and his family had to lose everything that they own, they somehow managed to resettle themselves in that small house. But majority of the people in the village are uneducated unskilled labourers as result of which it becomes extremely difficult for them to find work.

The loss and tragedy, which struck these people are beyond comprehension. Consequently most of the male members in the family had to go to other places like Barpeta or Shillong to earn some money to support their families as chances of getting

work in their own village have almost diminished.. As a result of which the majority of the children have to drop out because of poverty stricken condition at home and also they help their mother's to rebuild their huts by cutting mud cakes from the riverbanks and carry them on their heads to apply on the walls and floors. Resettling after the flood is a tedious and tiresome process for the affected people especially for the women and the children. Getting and applying mud on the huts requires a lot of energy particularly in a situation when the environment is not conducive for such labour. It is essential to mention that this is a very difficult task performed by women and children as they perform the whole process under a situation when the entire area is damp and soiled because of the recent flood. Children aged less than ten years of age including both boy and girl child are imbibed with this task of collecting mud cakes whenever their houses are eroded away by the floodwater. The women are entrusted with the responsibility of applying muds firmly on the walls and floors. A number of respondents in the village expressed that this is a very difficult task and requires consistency so they do not leave their work half way to bring mud cakes as this might spoil their work. Once the intensity of the crisis subsides in the village it is then the schools are open. It is observed that the prevailing ratio of girls attending high school is lesser than the other villages. The prevailing poverty due to environmental degradation has a deep impact on the overall development of a girl child.

Apart from existing poverty and poor degraded environmental condition, the people in Pazarbhanga are also conservative. As soon as the girl attains puberty the parents starts looking for suitors. Especially people from the deprived condition they usually gives their daughters in marriage in the neighbouring villages. One of the respondent mentioned that since they are not in a position to pay even the minimal dowry they train their daughters to do household chores and learn to cook to get a husband. Also, that the parents are concerned that their daughters may bring disgrace if they elope with someone from the other community or develop illicit relationship. In such situation the education of the girl child is compromised. In table 4.1 we see that the percentage of girls who have completed high school is very less. As the number of years of education goes higher their ratio comes down. The table reflects that majority of women in the village have never attended any school with total percentage being 35.1%. As we see the percentage of women who had attended 1-4 years of education is the maximum with

approximately 28%. It is only 12% of the total female population who have completed ten years of education.

Hence the data from Pazarbhanga village revealed that there is direct implication of poor environmental condition on education and overall development of women. Recurrent flood had resulted in giving rise to many social problems in the village. Only 9 % of the total population in the village had done 10-12 years of education. The data not only throws light upon the lack of higher education in the village but also reflect on the myriad of socio-cultural constraint which is prevalent in the village and also which prevents the people from attaining higher education especially females. This stands as a barrier in the path of development.



Photo 5.4 Women member of a self-help group from Nashatra village

Table 5.2 Percentage of Education Among Women in the Study Area

<b>Education among</b>		Village			
Female in the research					
area		Majkuchi	Nashatra	Pazarbhanga	Total
No	Total	137 <sub>a</sub>	52a	102 <sub>b</sub>	291
schooling	% Within	26.1%	30.1%	44.2%	31.4%
	Village				
1 to 4	Total	62 <sub>a</sub>	21 <sub>a</sub>	31 <sub>a</sub>	114
years of	% Within	11.8%	12.1%	13.4%	12.3%
schooling	Village				
5 to 10	Total	262a	87a	90 <sub>b</sub>	439
years of	% Within	50.0%	50.3%	39.0%	47.3%
schooling	Village				
11 - 12	Total	40 <sub>a</sub>	11 <sub>a, b</sub>	7 <sub>b</sub>	58
years of	% Within	7.6%	6.4%	3.0%	6.3%
schooling	Village				
13 to 15	Total	22 <sub>a</sub>	2 <sub>a, b</sub>	1 <sub>b</sub>	25
years of	% Within	4.2%	1.2%	.4%	2.7%
schooling	Village				
More	Total	1 <sub>a</sub>	Oa	$O_a$	1
than 15	% Within	.2%	0.0%	0.0%	.1%
years of	Village				
schooling					
	Total	524	173	231	928
	% Within	100.0%	100.0%	100.0%	100.0%
	Village				

Each subscript letter denotes a subset of Village categories whose column proportions do not differ significantly from each other at the .05 level (z test).

The general situation of education is abysmal in the research area. Young children seems to be going to school and hopefully could complete at least primary level of education while in the higher level of education the number of drop outs continues. The primary reason is poverty above other aspects of development such as awareness among people and basic infrastructural development in the area. The condition of women is more distressful as among illiterate the percentage of women exceeds to men significantly while in literacy it goes hand in hand with them up to 4 years of schooling and deteriorate drastically afterwards. Non availability of toilets is a major concern in the schools. Adolescent girls from the village Pazarbhanga where families strictly follow religious practices find it difficult to send their daughters to school in absence of toilet. Not only between the same gender groups but also there is a clear demarcation of inequalities existing between men and women in terms of education. As discussed in the chapter three, the older generations are not educated in the village Majkuchi, still they understand the essence of education in the present context they pursue the children to go to school, and hence this awareness is also reflected in the number of women going to school. Among the women who have never attended any school the difference is not significant between the different villages. These are mostly the women in the age group of more than 25 years of age. In the group who are going to school or have attended 1 to 4 years of schooling also does not show any significant difference but gradually when the number of years of schooling increases Pazarbhanga lags behind while women from Majkuchi is in a better position. It was found that from 10<sup>th</sup> class onwards the situation in Nashatra and from 5th class onwards in Pazarbhanga the scenario deteriorates and there was constant drops outs from school especially among the girls during this period.

Majority of the women who are enrolled or have completed higher level of education are undeniably from the affluent upper caste households. The overall situation is indicative of increasing awareness among the Majkuchi for education in general and that is benefiting some women but in Pazarbhanga village the situation is still gloomy. In case of higher education only one woman could manage to go beyond graduation in Majkuchi village as per the data collected by the researcher in the course of her primary data collection process. Only one woman in Pazarbhanga and two in Nashatra could make it to college. This state of education is indicative of the marginalization of the women from backward communities and their possible exposure to the conditions that

leads to vulnerability. Awareness about the entitlements whether it is political or access to services and resources is a distant dream so is this level of education. In such situation seeking help in the state of distress, accessing basic facilities such as health care get limited to ANM and ASHA, which is again on the mercy of the service provider. Because of low level of education and poverty the women are not exposed to any sort of media or sources of information apart from the peer channels or ASHA in the villages. The information provided by the ASHA is most of the time selective and limited based on their understanding of the government programmes. This is adding to lack of knowledge of any sort of government schemes resulting as major deterrent to access the health services or benefit of any other government programmes especially being implemented for women empowerment. Overall poor situation of education adds to the vulnerability of the women of marginalized section of the community among the population, which is in general poor.



Photo 5.5 Young girls helping people to travel after flood

#### 5.6 Contribution of State and Non-State Actors

The last major flood took place in the year 2012 and 2013 in and around villages under Barpeta area. Same year most of the villages under Patbousi Gaon panchayat was affected due to flood. Whenever, there is continuous rain for more than a week the water level of the river Nakhanda near which the village is situated rises and crosses the

safety level which eventually leads to flood in the surrounding areas. It is to be noted that there are many ponds; small and large in sizes are situated across the district. So whenever there is incessant rainfall for many days all these ponds would fill up with water to give rise to flood situation in the village. The respondent said that in almost every household in the village have ponds in the backside of their houses. So whenever there is rain these villagers keep an eye on the rising water level in the ponds. If the water level crosses the safety line, people begin to keep their valuables and necessary things on elevated places. It is to be noted that although the people of Majkuchi suffers from recurrent flood almost every year, they never get sufficient help and support from the government as well as any NGO's working for relief and recovery tasks in the aftermath of any natural disaster. During the period from 2011-2015 the researcher have not seen any development endeavors with significant results from the state as well as the local government in the village Majkuchi. Even though the community especially the male respondents were aware of their entitlements from the state yet the researcher had observed that there was a sense of hesitant for repeated approachment to the service providers and the Panchayat. The reason for such attitude could be the poverty ridden condition of the people, lack of education which restricts their knowledge and understanding of their right to entitlements and lack of jobs which force majority of the villagers to anti-social activities. As a result the state or the local government often do not entertain the demands and many times the presence or these people. .Some of the respondents expressed that they have approached the local Gaon Panchayat on several issues particularly regarding the different government schemes on low cost toilets, distribution of disinfectants for drinking water sources and also for the other government incentives for the BPL card holders. Especially women from the upper caste households of Majkuchi and also some women from the SC households have mobilized in a group and visit the Gaon Panchayat but majority of them went in vain. The researcher observed that the P.H.E.D had set up some hand pumps in certain households who had space. There was no method of selecting the households on what basis they set the hand pumps. However, some of them have become dysfunctional since many years and although the government officials promise to visit and make arrangement for drinking water they have not showed up so far.

After the major flood in 2012 and 2014 in the villages situated near the Beki River what the villagers expressed regarding relief materials is that every household in the village got three kilograms of rice and half kilogram dal. Irrespective of the number of family members the amount was fixed for everyone, which was not sufficient for a household with many family members. Respondents said that the Gaon Panchayat had not done anything for the development of the village neither it has contributed or initiated anything for the welfare of the people. There is no NGO working in that area, or any other institutions, which would deliver support to the local people in terms of knowledge or information regarding their rights or entitlements during such crisis. As a result of which the ignorant villagers do not get any help from the state or the local government despite being one of the most flood prone villages of the area. Since Majkuchi and Nashatra are adjacent villages the situation is almost similar in both the villages. Apart from providing some hand pumps in the two villages in which some are in a dilapidated condition the Public Health Engineering Department under the state government is liable to provide potable drinking water and sanitation facilities when there is any kind of environmental hazards. However, in terms of policies regarding rehabilitation or resettlement there is not much support from the local as well as the state government for the betterment of the society in terms of generating employment opportunities for the people who are affected due to environmental degradation caused by the recurrent flood, lack of promotion of cottage industries or small business endeavors for women who weaves or any kind of compensation to the families who have lost all their assets and houses due to the recurrent flood every year.

In case of Pazarbhanga the flood situation has become worse as a result of corruption and bad management from the Water resource department. The inefficiency and irresponsibility on the part of the local government officials has resulted into delay of proper embankment and dyke to prevent the water from deluging into the areas, where the villagers live. People are aware that millions of rupees have been allotted to the water resource department especially in Barpeta district. Although the standing committee on water resources in the year 2009-10 under the 15<sup>th</sup> Lok Sabha had entrusted the task of control of erosion and rehabilitation on the department of water resources and in which they laid down heavy investments made in this regard, there is no sign of development or any work done in Pazarbhanga. Still there is always the danger of flood and erosion and those people who live near the river always live with the fear of flood and erosion, could swept away their houses (Ministry of Water Resources, 2010). There are NGO'S also who are assigned to take up rehabilitation or

research projects. But due to recurrent flood these organizations could not work more than a limited period of time due to constant threat of flood in the area which causes major inconvenience.

Nonetheless during the floods, which took place in the year 2012 and 2014 two NGO's have worked on the flood-affected areas of Pazarbhanga. The first one is CASA (Churches Auxiliary for Social Action), an international organization, which played a pivotal role in arranging temporary shelter, hygiene materials and support to help the local people. The members of this group were present at the time of flood and their participation in helping the most vulnerable section was significant. The ANM of the sub-centre also coordinated in distributing non-food materials like a packet containing clothes, sanitary napkins, one plastic and utensils to one female members of the household. The ANM however, reported that the relief supply could not be provided to every household, as there was shortage of some packets. There is another local NGO who also worked in rehabilitation task in Pazarbhanga at the time of flood. It is called ADRA. This NGO had constructed insanitary<sup>11</sup> latrines near the embankment. They had also arranged for drinking water facility and provided water tanker/filter to store the purified water. However in the last flood, which took place in 2015 there was no support from any NGO and the respondents said that the male members of the family had built the insanitary latrines using bamboo and canes for their immediate requirements near the embankment area. It was observed that since most of the preferred methods for coping mechanism was absent, large chunk of people were surviving by using other methods for two to three weeks amidst the flood affected regions without any support or external interventions. During the onset of flood the people responded to it in a certain way as initially the thirst for reducing the impacts takes place first at the individual level or community level. However most of the time the intensity and magnitude of the disaster becomes much greater than the community could bear and as a result different stakeholders like the state, different departments and NGO's come into play.

An important activity which took place in Nashatra village under Patbousi Gaon Panchayat is worth mentioning. As majority of the plans and other government ventures

Insanitary latrines-insanitary latrine means a latrine which requires human excreta to be cleaned or otherwise handled manually either in sit, open fit or drain into which the excreta is discharged.

didn't show satisfactory results, however it was seen that despite of a hard life there were some women who fought against all the odds and had formed that Nasatra Mohila SHG consists of ten households in the year 2013. Their emphasis was on agricultural production. Even the Block Office verified their activities and provided some fund to initiate their activities. After receiving a fund of rupees ten thousand and they pulled money via different sources like loan and borrowing for another fifteen thousand rupees and produced agricultural products like mustard, tomato, cabbages, cauliflower etc which had a good market in the surrounding villages in Barpeta. As per three respondents who are also the member of the same SHG mentioned that they are satisfied with the work and output of the SHG. After opening the account the annual income of the have also improved and they earn upto rupees twenty five thousand to thirty thousand yearly. Even though the SHG have helped these women to improve their living condition there is an irony associated with it. Most of the women are either relatives of the Gaon Burha/ Village head man or the President of the Gaon Panchayat. None of the extremely marginalized families who do not have any sources of income or resources could avail such an opportunity so far. The researcher felt that it is the time when women empowerment should be highly encouraged and incentives should be given to deprived and marginalized.

#### 5.7 Conclusion:

The present study, was conducted in three villages namely Majkuchi, Nashatra and Pazarbhanga under Barpeta district of Assam. Endemic presence of poverty and deprivation of generations has resulted in a kind of sub-consciousness where there seems to be purposive ignorance towards the marginalized people in the research area. This purposive ignorance is because of poverty, which is leading to a kind of silence about the living conditions. The daily fight for bread and butter leave no space for people to think about their own conditions or even to question for their basic rights. Poverty has the potential to silence community to live a life of ignorance and unconsciousness to the level not to assert their own rights and entitlements and to aspire for a life like a human instead of a life reduced to that of a sub-human such is the story of the marginalized people in these villages. The houses are primitive, no sanitation, no real access to safe drinking water, health services and above all better employment.

People struggling for daily survival are cut off from the development that in the other parts of the world have achieved. Within the core community of the village stratification based on their religious and caste identities is evident. The life style, customs, rituals and social norms observed among these groups are somewhat different but their poverty ridden situation leads towards the coherent symmetry between these groups. Caste in such situation plays minor role over the major role played by poverty. In these villages no matter what religion or caste one belongs the poverty makes people vulnerable in all seasons. Even if there is flood or there is no flood while the diseases indiscriminately affect all the households in the area and limited services available to seek health care limits access to all. While the situation of SC Hindus and OBC Muslims, because of poverty does not show much difference in living conditions. The upper caste Hindu households also are exposed to the similar threats of life. The insanitary latrines in the light of poor purchasing power to access better quality toilets threatens all the water resources irrespective of the social status of communities. In the absence of industry, agriculture opportunities no option left for the people other than manual labour. The poverty brings its side effects such as school dropouts as the children are being used to support economy of the household curbing the hope of future. It also brings social evils like alcoholism and gambling whose worst victims are women. At any point in time in the society of these three villages women and children are vulnerable to violence, social evil and exploitation.

The women along with supporting the economy of the household through their wage earning bear the dual burden of managing household chores like fetching water, cooking food and taking care of the sick. If the pregnancy is a condition that adds to the vulnerability of the women as it is repeatedly imposed on women. This repeated pregnancy results in early neo-natal death. The family planning programme have reached to these communities in the form of copper-T as method to control child birth and tubectomy but has not actually empowered the women to assert her reproductive rights and developed courage to say no to unwanted pregnancies. There is very grim possibility of these women getting their rights and entitlements in the struggle of survival with almost poor education status that they have.

Primary reason of vulnerability although is poverty it has many faces such as low level of education, unemployment, gender and ignorance about the entitlements. In normal

course of life it is difficult to survive any disaster in the form of disease or death can appear any time. While during the flood the vulnerability conditions, intensifies for women. There are various factors, which intensifies these vulnerabilities. Primary among them is loss of wage that puts in economy of the household in jeopardy. While organizing the life in flood situation the women struggle to arrange basic necessities for the families. The most difficult task is to organize fuel for cooking, carrying water for drinking and place for defecation. Being a woman and bearer of responsibility for the household chores there is no escape from the struggle. To arrange these the women has to walk through floodwater and would expose themselves to the risk of being swept away by the current of the water, snake bites. Not only these but the prices of essential commodities like fuel, kerosene, sheets to protect themselves from the rain also goes higher during the flood time leading to exploitation of poor, but in absence of any choice there is no other option than to get exploited. The flood brings vulnerabilities posing economic and life threats. Being a woman it is apparent to get pregnant which is the best endowment by the nature to human kind but it becomes a curse if the woman is pregnant and is supposed to deliver while the flood occurs. The women become a liability for the family and there are grim chances of survival of the child.

To overcome the situation no flood action programme or health schemes or development scheme will help rather than collective action to address the poverty. As different aspects of vulnerability was one of the major objectives of the study which showed that economically poorest class, having very low per capita annual income are most susceptible to losing their lands. A major chunk of the households from both Majkuchi and Pazarbhanga attributed their loss of lands to the poorer economic condition due to recurrent flooding. Consequently it had resulted in immense vulnerable situation for the landless villagers during the flood causing insecurity to the people. Moreover poor housing is another problem in the research area to cater to the large family sizes especially during flood. Hence the disaster mitigation plans should done in such a way that it takes into account the socio-economic factors of disaster vulnerability. The researcher felt that if the government and the NGO's perform their task efficiently it will certainly help to control the situation from deteriorating further.

Again when the general health services in the flood affected areas collapse, it becomes extremely difficult for the flood victims from accessing the health services and

consequently this lead to the spread of epidemic in the surrounding areas. It is the utmost requirement of the hour that the government should be more careful in planning and provisioning of the basic health care at the time of flood and immediately post flood. Even the village level panchayat needs to extend their hands to deal with flood disaster in more comprehensive way. They should take the initiative in imparting prior orientation and training to the service providers like the ANM, ASHA and the MPW's to become prepared and assist support during the period of emergency.

#### **CHAPTER SIX**

### Summary and Discussion

The Indian sub-continent is prone to different types of disasters, whether they are flood, tsunami, earthquake or cyclones and over the years they have caused enormous damage to lives, property, infrastructure and crops. As mentioned earlier there is extensive information that reflects the concentration of economic, physical and human loses by different types of disasters in which more than 90 percent of the total deaths occur in 67 percent of the world's poorest regions. Again it is noteworthy that because of the unique geo-climatic conditions of India it is vulnerable to many natural disasters especially flood and consequently it is the second biggest contributor to deaths caused by flood disaster after Bangladesh in the world. This reflects the gravity of the situation of flood and loses of lives and livelihood in the Indian context as there is huge gap in understanding the long term impact of disasters and often the process of rehabilitation process (Reddy, 2013). Moreover even though these flood events might have taken place in different parts of the country under different causes, there is one common aspect which binds them under one platform is that majority of the victims are women, children, elderly, minorities and the disabled.

Current literature on gender and disaster reflects that women are the greatest sufferers in any natural disasters, especially during flood in case of the study area which is Assam. Though, the situation becomes unbearable for all, but especially for women and children, as are most often resource less, lack bargaining power and are dependent on male members. Recurrent floods push the communities to perpetual poverty and every year they are barely able to come out of the vicious cycle of poverty. Apart from the economic losses, the community faces other problems, for women, they find it difficult to even find places for toilet. The social norms build around the gender also add to the difficulties of women. Primary reason of vulnerability although is poverty it has many faces such as low level of education, unemployment, gender and ignorance about the entitlements. There are various factors which intensifies these vulnerabilities. Primary among them is loss of wage that puts in economy of the household in jeopardize. While organizing the life in flood situation the women struggle to arrange basic necessities for the families. Being a woman and bearer of responsibility for the household chores there

is no escape from the struggle. The flood also brings vulnerabilities posing economic and life threats. Being a woman it is apparent to get pregnant which is the best endowment by the nature to human kind but it becomes a curse if the woman is pregnant and is supposed to deliver while the flood occurs. The women becomes a liability for the family and there are grim chances of survival of the child.

Although there are several issues, this research is focused on the issue of water, sanitation and health problems of women in the rural areas of Assam during flood. It also focuses on victimization of geriatric women and women who experienced pregnancy during flood conditions and effect of non-availability of sanitation facilities on their personal as well as social life. The researcher felt that this is a neglected area which needed further research and more policy attention especially for the women who have limited mobility such as pregnant and geriatric. Further, the study also analyzed the resilience among the women and coping mechanisms to deal with such situation. The study also addresses the role of policy, state and voluntary organizations on the above issues.

# Research Methodology

The main objective of the study was to understand the different problems and issues that arise in a disaster situation like flood and effect of women in particular. The researcher also tried to achieve holistic understanding of the approach of state policy and interventions towards issues of water and sanitation during flood. Empirical study was conducted in the three villages Majkuchi, Nashatra and Pazarbhanga in Barpeta district of Assam.

The research is both qualitative and quantitative in nature. Both primary and secondary data were used to generate empirical evidences for the study since the study focused on flood and its effect on women, the socio-cultural aspects and behaviors during flood time was also crucial to understand. Developing such understanding involved understanding their socio-cultural fabric, and learning the behavioural patterns particularly during flood time. This kind of understanding demanded deep probing into the cultural aspects of the society and the practice of the cultural norms related to gender from the perspective of those who developed these norms and culture and those who practiced these norms.

Census of three villages was conducted. The main objective of the method was to collect data on socio-economic conditions of the households, such as education, caste, availability of assets and availability, utilization and access to water resources. The analysis of the data through cross tabulation has helped in developing an understanding of the different socio-economic and demographic variables. Qualitative data was applied for understanding socio-cultural fabric, and learning the behavioral patterns particularly during flood time. This kind of understanding demanded deep probing into the mundane social, economic life of the society and the practice of the cultural norms related to gender from the perspective of those who developed these norms and culture and those who practiced these norms. Tools used under this method were in-depth interviews using interview guide, group discussion, observational methods and case studies.

Even though the researcher have attempted to do an in-depth study to achieve holistic understanding of the research objectives, there were certain limitations that paved the way of the researcher in getting firsthand information in some occasions as the study was designed to be ex-facto, therefore in many cases the responses obtained from the respondents were depended on whatever they could remember about the hard times during the flood season. Since the study area Barpeta district have been perennially affected by flood, people with great economic hardship expect some kind of assistance in the form of money, food and shelter from outsiders who visit the flood affected villages. Hence in many situations the researcher felt that answers to certain queries were influenced by this notion and got reflected in their replies.

## Demographic profile of the research area

Majkuchi among the three villages under study is biggest with 235 households and population of 1139 followed by Pazarbhanga with 131 households and population of 603. The Nashatra is small compare to other two villages with 77 households and population of 373. Total population of the study area is 2115, including 52 percent male and 48 percent female which is comparable to 51.2 percent and 49.8 percent of male and female population respectively in the Barpeta district. The differences in the sex ratio between the three villages shows that both Majkuchi and Nashatra has a similar pattern almost 50 percent of female whereas the female population in the Pazarbhanga village is 43 percent, significantly low compare to other two villages. The researcher in

the course of collection of data observed that the socio-economic and cultural aspects of Pazarbhanga village are significantly different from the other two villages and that cannot be discounted while understanding the sex ratio in the area.

#### The women, flood and vulnerability: A Reflection

Patriarchy is not something that is unique to India, however patriarchal norms strongly guide life of the people in our country. Women and children are always among the neglected lot when it comes to distribution of domestic or social resources. Women's contribution although immense to the family and to the society it is never acknowledged. The poverty add fuel to patriarchy to make life miserable for women. In any of the personal or social decision making process women are denied participation. Hell lot of work with no privilege and no control over the life conditions such is the story of the women in these three villages. In the life of women in these villages there are two major sorrows, one is poverty that they deal with daily and the other is the flood that they have to deal with every year. We have made an effort to identify how these two conditions blend together and the women struggle to sustain their hope despite hardships. The first and foremost hardship is the water, basic necessity of life. Women the bearer of the domestic water requirements responsibility face hell during floods while fetching water. Women had to travel for water and bring water from other's people's wells which are not drowned or are in an elevated space. Women from socially and economically marginalised section face the wrath of the flood within the resource stripped communities annually. Most of the time the houses of socially backward communities are in the low lying areas and are more prone to get flooded first. In such cases the dependency on the better off families' increases for water. The supply of water depends solely on the clemency of people belonging to better economic condition or living on the elevated space. In normal circumstances these women especially from the marginalised section have to walk at least 500 metres to 1 km from their homes to fetch water in the buckets. It's only for women with infants, the men in the household go and bring water. Again getting drinking water from the nearby streams or rivulets is a difficult task not only for women but also men. It is must to know swimming to fetch water, as it was observed that women were scared of getting into the water due to fear of drowning.

The houses which are at the elevated locations always get into a fix. On the humanitarian ground they are bound to make their water source available to the needy people, at the same time there is constant fear of damage to the pump because of over use. Moreover many people starts drawing water from the private source and the owner is not in a position to stop overcrowding because of the desperate situation. In such situation unpleasant events like quarrels and fights often erupt and results in disturbing peace. These conditions are definitely not conducive for harmony in the social living. Such living conditions at the end adds to the vulnerability of women as they are usual victims of violence.

Amidst all these, whatever water is available is no guarantee to be potable. Primarily the ground water is not always safe because of possible chemical contamination. Moreover the shallow water table makes it vulnerable to the biological contamination. Overall situation of the sanitation during flood is such that there is no proper disposal of human excreta. All the human waste is going in to the same place mixing with ground water all around. For drinking water there is no other way to purify it to make it potable. The only thing available is chlorine to purify the drinking water. Chlorine is made available by the Panchayat or the primary health centres. This is again accessible when the families shift to relief camp. In general when they are at their home these tablets are not available to them. In case they are available the supply is not consistent. Therefore it does not results into control of diseases. There is general awareness about the drinking water in the community. People do practice the habit of boiling drinking water. But to maintain this behaviour requires constant supply of fuel and in given condition there is major shortage of resources. That is why frequent cases of stomach illnesses, warts on the feet, dysentery, jaundice, vomiting and fever are observed. Many women who came in consistent contact with the flood water had developed skin rash. Hence the women have to bath every time after fetching water to prevent such rashes. During floods, many women admit that they had to bathe everyday so that they can maintain basic hygiene. Everyday bathing means more water requirement. In the scarcity of clean water such difficulty adds to the agony. Another practice of bathing during Chua the custom of temporary untouchability and seclusion of women during menstruation makes it difficult more for menstruating women. Women don't cook or work as part of custom and most of the time keeps fast as they are not cooking to reduce the workload of man who is doing the household chore during this time. The

requirement of the water increases during this time as the women needs to bath daily and wash her clothes. In such situation early morning women venture out in the flood to fetch water.

An important aspect in context to the pattern of flood was observed in Nashatra village from the data collected in the course of field work. The northern part of the village Nashatra suffered the most as the floods come in first here and leave last during monsoons. There are NGOs that come to the other part of the village to help out compared to this part of the village- here even PWD works department and government did not send any help or reduce during floods as compared to the southern part of the drowned village. Even to give chemicals for water treatment many NGOs and PWD officials did not come to the area surveyed during floods. In such circumstances it becomes very difficult to arrange for potable water to meet the requirements of the people. Majority of the people are affected giving rise to many water related health problems. Also does it cause great inconvenience to the already weaker section of people like the women who were pregnant, women with infants and the older people and physically challenged people who are dependent on others for their movements become practically immobile in such situation.

# Personal hygiene and sanitation for women

The basic biological need of defecation and urination can turn into misery for women. The social norms and restrictions around women body has made it difficult for women, they feel shy about such matters. Difficult task is to find a spot which is high enough and would provide privacy and in dire need umbrella is used for privacy. Ownership of meagre resource such as rafts/*Bhels* could be at rescue to go further away to find privacy however it can't be a solution. The situation forces women and girls to wake up very early around 3 am, to relieve themselves before the men wake up. Going for defecation in the dark is real threat to life as there is always possibility of snake bite or attack by other animals. When women live in shelters they are able to wash clothes, but at other times they have to live with low hygiene. In such cases, many women responded to developing rashes on the body from exposure to the dirty water during floods. Children too suffer during floods. They miss out on school due to such a situation of natural emergency. Moreover, the duty of looking after the children primarily falls on the females of the household. Moreover, when they had to defecate

the mother always had to be around to look after them, so that they can keep a check on any carelessness by the child which may endanger his/her life. Young girls below 12 years old, were also ashamed to defecate in the open and used to come back without doing it. In 2012 floods, most people had to go to the relief camps. Even out there they did not have any means to defecate. So, most women used to row back to their homes and defecate around that area.

#### Men and the Flood

Women although are more vulnerable during flood the men are also affected. The concerns of male members in the households are different. While discussing the flood related issues the males tend to look into the administration and the state into perspective to understand the flood problem making the understanding macro than more personal. For example the case of land erosion frequently appears in the discussion of males. The point of discussion however is not the prevention of land erosion and is more about the compensation for the land lost. Most people, who have lost land to erosion, have not received any compensation from the government for the loss of land. A respondent who lost 40 *bighas* of land claims that they have to stay in the village in spite of flooding every year because they cannot afford to buy land elsewhere. Such landless farmers now live on *theka zameen* in makeshift houses while they have been constantly raising the issue with the government for compensation. Some people have made their land available for such landless families, and in return they collect a certain amount of money against the accommodation.

Men too, like the women were always tensed regarding managing their expenses to rebuild their houses post floods and grow food in their plot of land. Most men who worked as wage labour lived in Guwahati and Shillong and return back to the village after two-three months to meet their family or when a family member was ill. Coming back to the village meant that these men did not have any more means of livelihood, so they had to return back to the city again. Women were not allowed to join wage labour by the men in the household even though they were aware that two people working would help to bring more earnings. As women working as wage labour is low status particularly in the families belonging to upper caste. However this does not mean that women does not contribute in the household income. Instead of wage labour women are assigned the work of keeping engaged in raising poultry and livestock in the house

through which they can raise earnings through it. In very few cases the important decisions in the household was seen to be taken after consulting the elderly women or wives, but this was an exception. Primarily the male dominates the household and is the main decision maker. Therefore the concern for the sanitation facilities such as toilet does not take the priority as it affects the women most and not the men. The concerns for the male are more towards income and the benefits from the government scheme. Surprisingly very less men were concerned about the education of their children. In such male dominated society the concerns of female always takes the back seat. This phenomenon also throws light on the objective of development from different gender perspectives. This aspect of gender perspectives with respect to decision making and development process have been also emphasized by the renowned environmentalist Vandana Shiva in context to the Chipko Movement. Vandana Shiva argues that in movements like Chipko, two different world views of the Indian society are reflected. One of them is the masculine perspective which she also refers to as the destroyer of life in context to the commercial forestry system, which considers forest as a resource to be exploited for money. The other is the feminine life conserving principle of forest as the diverse and self-reproducing systems (Shiva, 1988). In respect to the problem of drinking water, Vandana Shiva critiqued the 'National Master Plan for India for the International Drinking Water Supply Decade (1981-1990) as the plan had emphasized on everything but water and without looking at the indigenous situation it had adopted the western model of water supply system which had consequently resulted in failure. Moreover the western male consultants who are responsible for developing water purification technologies for the small communities especially in the third world countries are insensitive to the gender norms. They have been ignoring the indigenous technologies used by the Third world women which are decentralised, low cost and mechanical (ibid, 1988). It is very essential to understand that though in the western countries the management of water supply is held in the hands of men but in tropical or rural areas of the developing countries, it is the women who are responsible for generating safe drinking water through traditional ways.

Moreover Gabriele Dietrich's work is also suggestive towards the similar issue where she mentioned that the existence of patriarchy itself suggest the position of women as inferior to that of men and it eventually creates a class within a class. In the Indian context as well as in the other developing countries, men holds the production system which are directly profit oriented and the women engage themselves in the security of the environment (Dietrich, 1999). Hence the above description shows the presence of some lacuna in proper application of one of the major tenets of disaster risk reduction initiative which is "A gender perspective should be integrated into all disaster risk management policies, plans and decision making processes, including those related to risk assessment, early warning, information management and education and training' (Valdes, 2009).

## General Risk and vulnerability during flood

The first and foremost problems occurs when the roads become muddy and slippery immediately after the flood as there is extreme danger of falling and getting hurt. Most roads get blocked or engulfed by floods, thus making it very difficult for people to move along with livestock. Moreover, it becomes an additional burden to look after animals during floods, due to a lack of place to keep them safe- most are kept in the shelters. People have to live amidst great danger, and they somehow get through with it with very few resources. Nowadays, many people especially from Pazarbhanga and Majkuchi villages keep a raft or boat ready before rainy season. Also, most people keep important emergency phone numbers handy, so that they can seek help in case floods hit the region and for rescue purpose.

During severe flood the water level is very high and the living becomes absolutely impossible. People leave their houses and take shelter in the relief camps and on the elevated roads. Most of the time the water appears sudden and it is not possible to carry all this household goods and livestock in emergency. Saving the life than the goods becomes the priority. In such situation household goods are left behind with the livestock. As there are no people or few people in the village the left behind goods and livestock becomes prone to theft. The families which later come back in search of their property could not find them which becomes a major problem to rehabilitate. However meagre the possessions is it is important for the sustenance of the families however people could not deal with this problem to find a solution. As most of the time the culprits are among the same community. The impact of such thefts and the robberies is severe on the women while recovering from the flood as they have to manage domestic chore with limited resource while recovering from the flood

There were families who reported that they have stayed hungry for days during floods. A male respondent told that his family was without food for 4 days in 2012 flood. Food being major concern one could imagine the possibility of fishing and fish to be potential source of food. Although the fish is part of regular diet, it is not available all the time even during flood. For fishing minimum resource such as raft is must to travel to the location where the fish is available. Raft is not easily available to all the families. The supply of food material is another concern. There is an acute shortage of food during such times. People have to live on tea, biscuit or chapati, as they cannot get their staple food rice. As a result of which it has direct repercussions on the health of the children, pregnant women and neo-natal mothers. A women who is managing her house all alone as her husband works in Guwahati had a terrible experience. Non-availability of transport made her swim through the flood to buy food supplies and gas cylinder. She could swam the distance through the water from the Palhaji Market near Pazarbhanga area and back to her house. In the meanwhile the children were left alone at home. Even in case the men are present it is not always that they will share the responsibility of women. However fetching the food material from the market is primary responsibility of the male member of the family. The gender division of labour is clear and men do not do the work that women are supposed to do. Most of the times, men are mostly involved in hajira work (wage labour). The rest of the household work was mainly done by women unless they were working women too. In this case both shouldered the responsibilities. However this is not a common scenario in the study areas. Only women from some households in Nashatra and Pazarbhanga does part time jobs such as cleaning, washing clothes at other's houses and reaping at the time of harvest.

In some households, women respondents shared their experience with the male members of the family; the male considered sharing women's work such as taking care of children fetching water to be not masculine. Therefore men are of no help to the women and women have to pull all the work alone. However referring back to what Dietrich had said about the existence of patriarchal society and how it creates a division of labour between the two sexes. Irrespective of the social construction of gender roles in a patriarchal society, their roles are reduced to often non-supportive and non-productive after the flood subside. The researcher does not refuse the presence of hierarchical roles in the study area. However the male identity as the provider and saviour is highly challenged once they lose their jobs or opportunity to earn money.

Madhavi Ariyabandu in her work also focused on the fact that during crisis they not only lose their position as the guardian and provider of economic support to the family, they also fail to provide emotional support to the family as their gender roles are constructed in such ways that it is not 'manly' to dwell in any kind of emotional affairs. Since the gender based social conditioning also do not give men the space to develop the skills of domestic task and care giving and eventually in reality the gender based social expectations largely isolate men after any kind of disaster leaving them to deal with their own loss and grief (Ariyabandu, 2009: 8). Eventually they resort to alcohol consumption and domestic violence to cope up with their hopeless state as seen in village Nashatra and Namakha area under Majkuchi village. The irony is despite the truth is expressed so loudly the role of women have always been subjected to vulnerability and oppression and the major consequences has to be borne by them despite of their active participation in the surviving process ain the aftermath of flood in the study area.

#### Vectors and diseases

Nuisance of the mosquito is unbearable as the situation is conducive for mosquito breeding all-round the year. Frequent eruption of malaria and similar kind of fevers are observed. At individual level women try to sanitize the surrounding of the house by pouring phenyl and other disinfectants to keep mosquitoes and diseases afar. Most of the women also burn incense sticks and dhuna during these times, like they do even during non-flood months to keep insects and mosquitos away. In case of insects the smoke is useful to keep them away however mosquitos the major nuisance is not controlled by it. It was observed that the smoke is useful to keep mosquitos away for some time but unable to repel them for longer duration. The measures taken at individual level cannot reduce the incidences of fever. The area is endemic to malaria and similar kind of fevers. Despite there is no mass scale collective institutionalized mechanism to control vectors to prevent occurrence of diseases. In all the three villages 25 percent population as reported by the respondents, suffered from water related illness such as diarrhea, dysentery. The data of illness compared with the age group revealed that major victim of such illness are children in the 0 to 5 years of age group. Where 34 percent of the children in the age group of 0 to 5 years reported to be suffered from diarrhea or dysentery. While the next most affected age group is 6 to 16 years of

age with 29 percent of the children suffered from at least one episode of diarrhea or dysentery. It is important to note that although these groups seems to be most affected the prevalence of such illness is reported in all the age groups in all three villages. Among those 543 reported suffered 503 visited doctor to sought treatment while only 37 reported to not to seek medical assistance for the illness reported.

## Coping with the situation:

Community and the gender division of labour has significant role to play to mitigate the effect of the flood. In cases where a family suffered from grave loses or any form of danger, the whole village come together to help the family in whatever way possible. Very few households admitted to keeping a mobile phone, so that they could help one another in times of need.

In 2012, when floods occurred in Pazarbhanga only one family had a boat. Nobody had rafts ready. As a result, there was chaos. The question was who to rescue first with their livestock on the boat, especially for people and children who do not know swimming. One of the respondents who could swim took many people to safety by pulling them through water. A women who could not swim drifted away in the water, she was made to hold on to a jackfruit to which a rope was attached and was pulled safely. There is great danger of people slipping and drowning in the flood water. Some casualty was also seen in this respect. The village community come together in such situation to help each other in their capacity. In 2012 and 2014 floods most of the families arranged drinking water from the hand pump of another neighbour having housed at elevated spaces. This water was carried to homes using a raft. Some women also kept stocks of food beforehand so as to remain prepared in case floods arrive.

Changs (bamboo roof on stilts) are made during floods by men, after which all the work of looking after the family members, managing the cooking and cleaning is handled mainly by the woman in the household. Women have to get into knee-deep water to wash clothes, utensils, sometimes even cook. Sometimes women, as well as men, have to carry smaller animals or their children on their backs to move them from one place to another during floods.

During very high floods, rafts/bhels are used by people who do not own boats. Also there were some instances when the rafts were used to transport patients from the flood

affected area to the shelters and to the main roads. In the year 2015 since the floods were not high, boats and rafts were used mostly during fishing. Otherwise these rafts come handy to transport the sick to nearby town. Barpeta Medical Hospital, located 4 kilometres from the village Pazarbhanga is the most preferred place to receive any medical treatment, if not alternative treatments. During floods, people are sent to the hospital by boats. In one case, a woman who had to deliver a baby had to give birth at the shelter set up in a school while she kept waiting for the boat services to arrive. Other village women cooperate and help out in such cases. Due to delay, doctors and nurses were found to arrive much later after the delivery of the child. In such situation also most of the time medical assistance was reported to be prompt. It is generally because of the active coordination and rescue done by ASHA members that such assistance reached pregnant women during floods. The pregnant women, who had to undergo C-section delivery, were somehow to be shipped to the nearest hospital by ASHA members, who played a major role in the meanwhile.

In relief camps, pregnant women, used to live together with other women. Before delivering the baby, most of these women admitted to doing household work and travelling by raft to the relief camps during floods. Some women used to take pride in the fact that they used to work normally during their pregnancy which is contrary to bed-rest prescribed by doctors. They tried to keep up with the nutritional requirements by eating fish and vegetables whatever was available; however fruits were not included in the diet. The firewood for cooking was generally collected by the other family members including children of the household in such circumstances. Pregnant women faced difficulty mainly during defecation. In the available toilets in the shelters there were token systems, so people had to wait in queue. In other cases, they also had to look for places to defecate much like the other women.

People in the area has innovated different means for cooking to deal with the problem of fire wood and tackle the issue of water. During floods it was found that the cooking was being done using tin canisters. This particular tin canister was cut open in a way to serve as a fire pit stove. The bottom could store the ash and the air flow allow the firewood to burn completely and give maximum output. To be prepared for the flood the families make arrangement for the firewood during non-flood period. Firewood is stored during the non-flood season. The space for cooking is created at elevated place

where the stove is placed and cooking is done. Sometimes to create such elevated *Chang* a tin chair and table is also used. By using these simple means the cooking is possible in the knee high water in the kitchen.

#### Issues and coping with them during non-flood period

Mainly the Scheduled Caste community villages suffer more than other social groups. Most men who are alcoholics come and beat up their wives to gamble and drink. This was the case in many households of the Nashatra village. Alcoholism is a nuisance in Nashatra village. In one instance when a respondent who worked in Mahila-Samiti (women's group) was made in-charge to raid alcohol *thekas* – alcoholic men resorted to harass them and they were forced on many occasions to lose possession of liquor for fear of their lives. Even police protection may not be available at all times, so this practice continued from 2010 to 2012 after which it was stopped. Alcoholism resulted in domestic violence in many households. In other instances, there were also cases of violence against women by her in-laws in the absence of the women's husband. Even in such cases, the Mahila Samiti has taken stringent action against concerned individuals. Many women in Nashatra and Majkuchi villages used to regularly borrow money from other families or the Self Help Groups at times when they need financial help particularly during the post flood period when there is need of financial assistance to rebuild the house.

Most women admitted that they did not have to do much of the daily chores during floods, however once the floods were over, they had to do more work than usual to revive the damaged property. Most of the *kuccha* houses crumble down and get washed away with the water. Moreover, every year the walls, prone to breaking down in time, have to be rebuilt every year, or else there is fear of wild animals to easily enter their houses. The bamboo frame is prepared by men, but women both old and young, do the work of putting a mud layer on the bamboo wall, at regular intervals, so that the walls last long. Moreover women also have to do the additional work of putting mud layer on the floor and mud stove. There are times when women have to undergo verbal abuse when they try to get dry mud from other's residences too. Also most of the furniture, utensils and clothes have to be taken out and put in the sun for drying and cleaning, over and above the normal household work that women have to do. Many families go

through loss of property during floods, which they get to assess only after the floods have passed.

The community identifies that the sanitation is a major issue in the area and there is sufficient level of awareness around the issue. At times the community decided to collectively solve the issue through the women groups but they could not find the solution. On being asked, whether they have personally tried to make shared toilets in their vicinity or in their premises, some families pointed out that due to lack of space they could not build a toilet and resort to open defecation by the river side. There are two major hindrances to resolve the issue of sanitation the primary is the land and next is the money. There was a general understanding that the problem needs to be resolved but in the absence of space and money everyone was relying on some government scheme where they will get a toilet constructed free of cost. Some schemes are present in the village whereby women are provided financial assistance in the form of loans which need to be repaid in small instalments weekly or monthly, according to preference. Many women have availed it, but it is unclear whether they have used the money for only constructing toilet facilities. As there were no visible toilets in any of the villages as per the specifications of the schemes. Whatever toilets were present were insanitary which can give little bit of privacy but do not dispose the human excreta in proper manner. Therefore it is clear that the money received from the government was used for purpose other than the toilet construction. Nonetheless, some admitted that they used the borrowed money to rebuild houses after floods destroyed it. This also indicates that the concern of the toilet is not the sanitation but more to do with privacy of women. However the basic and acute problems take over and the issue of sanitation remains unresolved.

Villagers along with the problem of toilet also recognise the problem of safe drinking water. Some families have started making efforts towards making water clean and safe for drinking. Apart from boiling which is expensive method to purify water some families were found to be using a charcoal filled earthen pitcher to purify water. Water purified with this pitcher is used for drinking purpose. Although such water filters are helpful to reduce physical impurity from the water they have limited scope to clean the biological contamination which is the major cause of water related diseases. Moreover it is not clear how much such filters would be useful to tackle the issue of arsenic and

other chemical substance generally present in the water in the area. Still such practice gives a hope and indicate that people have started realising the importance of safe drinking water and have already taken a step towards it.

#### The Health System:

Women in normal circumstances in life face difficulties to access resources where the social norms determine their mobility and access to resources. The present study was primarily an attempt to understand vulnerability from a gendered perspective and also to deal with some of the major health problems that surfaces during flood and non-flood situation. The study reveals disturbing realities about how the system have failed to provide the basic health care services to the most underprivileged. Over the years the government have spent considerable amount of money for the development and welfare of the people. Irrespective of so much of investment and attention, the three villages Majkuchi, Nashatra and Pazarbhanga have not seen the ray of any improvement in their lives. The darkness continues to prevail and so as discrimination and unequal distribution of resources among the different social groups in the villages. There are case studies mentioned in chapter four about the adverse reproductive health problems following flood situation which includes premature delivery, stillbirths and delivery related complications. However this is a common scenario in terms of health and biological issues in most of the disaster affected areas in the poorer regions. It was observed that pregnant, lactating and the geriatric women needed utmost care aftermath of food situation.

Regarding the availability of basic health services in the villages the common concern raised by the villagers was about the ANM. According to the villagers the ANM did not do a good job especially in Majkuchi and Nashatra in enquiring the need of people for various medical and other supplies. Even in the sub-centre only few vaccines for pregnant women and children were available for free. Medicines for other ailments were unavailable at all times of the year. Ambulance facility was available even though it was delayed. Most people did not go to the sub-centre since transport cost was high especially for houses farther away from the sub-centre. For minor ailments instead of going to the doctor, the villagers go for men who can do jhar-phuk (faith healer) which is an alternative medical treatment done by invoking chants. For bigger ailments people

went to the Barpeta Medical College Hospital, located 4 kilometres from the village Pazarbhanga and around 7 to 8 kilometres from Majkuchi and Nashatra villages.

In this regard Madhavi Ariyabandu expressed her concern in context to flood affected women victims in Sri lanka that 'displacement in the disaster aftermath presents different scenarios for women and men, although both have been impacted and uprooted from home. The biological aspects demand certain specific needs of women that must be met: that is the sanitation and privacy associated with menstruation, pregnancy and lactation as well as dealing with the social and cultural norms attached to menstruation and childbirth' (Ariyabandu, 2009: 10). Even in the case of the study area also it was observed that menstruating women were asked to live separately from the rest of the household and are not allowed to make any physical contacts with any family members and maintained a kind of seclusion. Especially when young girls menstruate for the first time they have to go through a chain of complex rituals and total seclusion. Hence in a society when such norms are rigidly followed it is the need of the hour that women's requirement should be considered. But in case of the study area except for Pazarbhanga village none of the relief agencies during or aftermath the flood have neither focused nor cared about women's health, reproductive care and their privacy needs. The researcher have mentioned certain examples to show how there is gender discrimination in respect to health care services to not only in the study area but also in other parts of the world. For instance post Tsunami in Tamil Nadu, the needs of displaced women who were lactating and those who were pregnant were not given required attention by the state (APWLD, 2005:9). It was very disgraceful on the part of the relief agencies as well as the state as no treatment was given to women who suffered from breast milk clotting after losing their babies at the camps (ibid). Again during the floods in Bangladesh in the year 1998, young girls reported infections, irritations and of urinary tract infections (Chakravarti and Walia, 2009) as they could not keep themselves clean at the occurrence of flood and had to live on using damp clothes as they did not have access to sanitary pads or other resources like relief agencies to provide them with sanitary pads and medicines (WHO, 2003).

### The State Aid

In the post flood scenario various assessments are carried out for water, fisheries, crops, and infrastructure is done to assess the damages caused. The Agriculture department

assesses damages caused during floods and provide relief in the form of seeds, fertilisers etc. The fishery-abundant district also suffers during floods, the assessment of which is made by the Fishery Department to give out compensation to the flood victims.

In terms of relief and resources received through various schemes, no such discrimination is seen that was made based on caste or religion. This is because separate schemes targeted for social groups create access to resources in Barpeta.

## The Flood and Policy Initiatives

Geographically, Barpeta district has a low lying altitude compared to other districts in Assam. The area is criss-crossed by various rivulets and water bodies. This topography of the land makes this area highly flood prone. The flood is a serious barrier to development in the area. In the research area it was observed that, there is an exemplary link between flood and the development in Assam. Barpeta being flood affected district is not the exception. Each passing year flood is leaving behind a trail of destruction that includes roads, embankments and concomitant erosion. It has become a vicious cycle between flood and development. Every year floods come and undo the developmental initiative initiated during the non-flood months. The same infrastructure is being repeatedly constructed to achieve the same goal every year. This is emerging as a serious concern as the development funds are being utilized in resolving the proximate problems not the root and distant one. The need of the time for Barpeta district is basically concrete measures aiming to stave off the impact of flood and erosion. As erosion is more dangerous than floods it can occur during flood and non-flood seasons. When flood occurs, fields, crops and homesteads get inundated, still it keeps standing after the flood water recedes in spite of the destruction. This is unlike what happens when erosion occurs. People are compelled to relocate to areas which are alien to them, leaving behind their ancestral lands and crop fields to seek livelihood falling into financial hardships. In retrospect after the study, one finds that concrete measures to combat flood and erosion related social devastation has not been effectively handled in Assam, and Barpeta district. Any person who has been a victim to flood would agree that stop-gap arrangements and short term measures taken all over the previous years are not resulting in any success. Concrete flood protection measures require investment of very huge amount of funding, to the tune of thousand crores.

Traditional flood protection measures like earth embankment construction has been tried methods but, it does not work as effectively as boulder embankments in the short term. The lesser amount of funding received for flood protection, whenever boulder embankments have been built it has provided long term benefits. New technologies like geo-bed textiles are even more effective in the work of setting up embankments by the river side. It is a form of geotextile which is filled with sand and is filled against the river facing side of the embankment. Another factor to adhere to is construction of embankment structure according to design suggested by competent engineers. However, as per executive engineer of the public health department, there are deviations from the prescribed structure of embankment in general, which leads to breaching of embankments during floods. Thus, there is a need to introduce modern technology in flood and erosion protection. There is a need for a comprehensive plan encompassing all rivers in the region where rivers notorious for causing erosion should first be tackled through sound infrastructure and engineering.

Likewise, short term measures for erosion control will not be sufficient and hence require the increased participation of competent engineering workforce and community. Erosion occurs even during non-flood years, mainly due to faulty engineering. A river which has been artificially obstructed ensures that its occupies the previous surface area by eroding its adjacent land to make up for the loss of area, say for instance if a river is supposed to cover a surface area of 1 kilometre and has been obstructed to cover 800 metres, it would engulf 200 metres of adjacent river banks to eventually cover an area summing up to 1 kilometre. As such hydrological data and its applied knowledge need to be explored to deal with the curious case of erosion in Barpeta during winter months, especially along River Beki which as markedly strong water velocity. In such case community involvement is crucial for maintaining the free flow of the river. In such case a comprehensive plan needs to be placed with the government to tackle the flood situation. Floods are natural disasters which cannot be stopped, but the effect of destruction can be lessened with great effect. If it could be done by using the appropriate technology and setting up mechanisms larger development goals could be achieved. This will help to uplift people and pull them out from their miserable living conditions.

## Water, Sanitation and health policy initiatives

Sanitation in the time of flood brings misery to the life of people particularly those who are most vulnerable. During the study it was observed that there are many issues which were undermine while implementing the programmes to improve sanitation access by Government at both the state and the central level. Central Rural Sanitation Programme(CRSP) was launched in the late 90s, was replaced by the Total Sanitation Programme and has progressed to Swaccha Bharat Abhiyan. Under the latter various works were undertaken such as construction of individual household toilets, toilet blocks in Anganwadi centres, solid and liquid waste management, and community sanitation blocks, were coupled with IEC on open Defecation programmes to create awareness against open defecation and hygiene- to make areas open-defecation free. However, the responsible authorities miscalculated the costs to be incurred for construction of individual household latrines, which ultimately led to failure of this programme. For instance, it allocated a very low amount of Rs. 600 per single-pit toilet for the BPL families; eventually it had to be raised to Rs. 1500 per latrine. This included only cost of constructing the pit leaving the cost of erecting latrine walls to the BPL families. 90 percent of the incentive costs for the pit were shouldered by the government and the rest by the beneficiaries, yet it pushed these families with a lot of financial burden. In the first instance if a higher amount was allocated for toilet construction, there would not have been need to reallocate more money under the Nirmal Bharat Abhiyaan and Swachch Bharat Abhiyaan at a later stage- Rs. 12000 which is currently allocated is a more realistic cost required to construct a sturdier toilet. The policy makers had earlier hoped that if they construct toilets people will become habitual of using toilets, and even if it were to get inundated or needed repairs, these families would invest their own money to build toilets irrespective of government assistance. Sadly, in the consecutive years, it was seen that this did not happen and people resorted to open defecation again.

As far as water is concerned, the government is providing support in various ways however there are several limitations to make the piped water available. In the areas vulnerable to erosion and flooding piped water supply is not feasible, that is spot water sources like a Mark 2 or Mark 3 hand pump is the only viable source of water. However, it is very prone to arsenic contamination underground thus making matters

worse. In Barpeta district, the ground water level is shallow and by default is prone to bacterial contamination by being close to the surface. Of late, the presence of arsenic contamination has been found in the water in Barpeta, and the government is taking active measures but if piped water can be made available all these problems can be done away with. But, in rural areas where one may be able to take water supply from a piped source of water distribution, in Barpeta households have been found to have a preference for hand pumps as the water depth is low reducing the pipe cost and inherently lowering the cost of setting up a hand pump in their backyard. Herein, the government needs to intervene at the beginning by subsidising the costs to motivate people to set up water supply connections under the piped water supply scheme. The piped water supply scheme had earlier failed especially in non-electrified villages and remote areas. In such locations water was pumped by diesel-run motors, which created lacunae in terms of raising difficulties in the transportation of diesel to remote areas all year. At present the government has understood the impracticality of setting up diesel run water pumps in remote locations, by attempting to electrify such parts of Barpeta. Thus, the government needs to encourage more people to enrol for individual piped water supply if the water and sanitation schemes must succeed in Barpeta. government also struggles with providing funds year after year for the operational maintenance of the infrastructure for the successful implementation of these schemes. As, such there is a need for the people to come to the front and take responsibility for operational maintenance for such schemes to sustain and succeed. Once people have access to the benefits of treated water, they will be encouraged to continue with using such services. Also, the government must intervene to remove hand pumps completely to avoid water contamination. In remote places where people are reliant on hand pumps, solar-powered pumps can be used to run piped water supply of treated water. Only, in the most difficult situations should hand pumps be installed to stave of ingestion of chemically infected water.

The government has addressed other ground difficulties by introducing the construction of elevated or overhead service reservoirs. It is not always possible to pump water to provide water throughout the day even though there is electricity in the household, so placing a rooftop reservoir helps people to store water in reservoirs from where water flows down under the impact of gravity- thus eliminating the need to pump water throughout the day. There is a pilot scheme working at hand, in Barpeta, whereby a

mobile laboratory would travel across the district to test groundwater contamination in the flood affected areas, or areas without potable water sources. The water sample provided by the concerned persons are tested in the mobile laboratory and the results are shared instantly, thus helping these people understand which source of water is potable in the short run. Another service provided by the mobile laboratory is to treat water on the spot in flood affected areas. This initiative has a lot of potential to save people from water related health hazards however its success depends on the implementation and coverage. Although as of now this initiative is functioning fine and is proving to be a boon.

The collaboration of different departments is crucial during flood situations. Two of the most important departments are critical during floods namely the District Disaster Management Authority and Public Works Department (PWD). Under the district administration different departments are coordinated and respective duties are delegated effectively- most importantly provision of safe drinking water to displaced flood victims is made first and foremost in the event of a flood. PWD works towards restoring disrupted communication links during flood and other disruptive emergencies, say restoration of inundated roads is carried out immediately by this department. Even community level engagement through Panchayat institutions is active during floods.

## Concluding Remark:

Poverty in the region is endemic. From generations' people in the research area has been experiencing deprivation from basic material needs. This desperate situation has made them unconscious of the real issues that can tackle the flood and poverty. There is no priority to education of children and the women are completely ignored. It seems that the community have silently fallen prey to the situation and have lost hope for better life and have accepted the present misery to shy away from any efforts that could pull them out of poverty. These three villages are example to show how poverty has potential to silence community to live a life of ignorance and unconsciousness to the extent that they do not to assert their own rights and aspire for a life like a human. Such is the story of the marginalised people in these villages. The houses are primitive, no sanitation, no real access to safe drinking water, health services and above all better employment.

The women in the area are bearing the burden of this poverty as well as the disaster not only once but several times. The flood is tied up with the life of women for life time. The struggle of women to arrange necessities of life for the family is intensified by the flood. The poverty and the flood are intrinsically related to each other, like a vicious cycle. The families organise life post flood to deal with the poverty and try to stand up by the time they are able to do that flood arrives and all the efforts are washed with flood water. Moreover being women itself become burden during such time as basic biological functions such as defecation add to vulnerability and bring misery. Routine life tasks organize fuel for cooking, carrying water for drinking and finding place for defecation add to the difficulty of the life but there is no escape. The situation of women in these three villages indicate how important it is to empower the women and make gender sensitive programs and policies.

The policies and the relief work is always male centric approach to tackle the flood related issues in the area. During the flood time all the schemes that are developed for relief are accessible for male. The male takes lead in the planning and participation in any programme developed for tackling the rehabilitation issue. Although the women play a critical role in the rehabilitation in the social and political life they are excluded from direct access to benefits. Their voices do not get space to make the efforts gender sensitive. There are experiences such as an experience from the Tsunami Response Programme, Andaman and Nicobar Islands with Disaster Emergency Committee has demonstrated possibilities of building women's resilience to disasters by empowering them as participants in community decision making (Elaine Enarson, P. G. Dhar Chakrabarti, 2009). Culturally and socially women in the area have limited space and such social environment provides no space for them to raise their concern and thereby make those concerned issues to be addressed collectively and by the policy. Simple issues like defecation and menstruation during flood makes women vulnerable. Puberty, pregnancy and lactating period are the periods of special concern where women require consistent medical attention. During flood time such conditions makes women vulnerable, until women gets an opportunity to raise these concerns and engage in the solution factors, such vulnerability could not be erased. The situation demands concentrate efforts of women empowerment and create space for women to participate actively in the planning process to deal with the flood.

Again another important aspect was that the gender norms are strictly observed in nonflood period. The flood distorts the normal course of life so as all the cultural norms. To mitigate the effect of flood different social norms emerge in the form of gendered division of labour where male and female contribute equally to try and restore normal course of life. The most problematic area in these circumstances is non-negotiable social norms that continues all the time such as menstruation associated norms and the shame around defecation for women. Additional burden for women is pregnancy and care giving for small children, managing water resource for household in difficult conditions. Poverty adds to the vulnerability. Although women becomes more vulnerable if their mobility is compromised in any of the conditions like pregnancy or old age. All the social groups in the area seems to be affected by the devastation of the flood more or less equal except few upper caste families in Majkuchi probably due to land holding and the resources available to them to restore their lives post flood and their planning for such situation attributed to their education and perceived risk of disaster. However it was found that all the social groups particularly SC, OBC Muslims are equally affected and are living in the desperate conditions. The state's provisioning and schemes do not consider these nuances related to poverty and gender particularly to health of women. The programmes are based on general experiences and are not context to specific to the area this is a classic case of one size not fit for all. The local solutions and the indigenous knowledge and technology if given space in preparing for flood and rehabilitation would do better instead forcing solutions developed without considering peoples social and cultural life. Simple technology of erecting platform for storage, cooking stove, rafts, housing if could get the proper blend of modern technology can significantly reduce risk of the disaster. For example developing simple material which can be durable and sustain in the water develop to construct house. If such small achievement are integrated with the skill of the local people to construct houses it will help them to deal with the post flood effect and save their energy and money to reconstruct the house every time. But such an approach is only possible if the indigenous ways of living their technology and skills are taken into consideration while planning for the reducing the disaster risk, relief and rehabilitation. For such kind of planning an opportunity for the people to be part of the whole process of planning is apparent particularly to the women taking a gender sensitive approach as women are the worst sufferer and are crucial in rebuilding the life after flood.

It is important to note that the problem of flood cannot be dealt by merely looking at flood as natural disaster which destroys the property. It should be understood in the social and cultural context of the people whose property is getting destroyed. Until such perspectives guide the solutions to tackle the effects of flood, the devastation due to flood cannot be stopped. The vicious cycle of the development and destruction will continue unless the people especially women remains weak. The empowered society could find solutions to their problems to change the situation and sustain it. The state has responsibility to give that opportunity to the people to break the vicious cycle of development and destruction. Its time that the state should think out of the box and established practical measures like shelter homes, temporary buildings for schooling for the children and job opportunities should be provided to the flood affected victims by the state.

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