



Panchayat Base Line Study of Naruathan (Dhemaji), Tatikata (Morigaon) and Bhatkuchi (Barpeta) Gaon Panchayat, Assam

A Compiled Report

Under GoI UNDP Program on Institutional and Community Resilience to Disasters and Climate Change

Conducted jointly in collaboration – District Disaster Management Authorities (DDMA) of Barpeta, Dhemaji, and Morigaon; Assam State Disaster Management Authority (ASDMA) and All India Disaster Mitigation Institute (AIDMI)



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Background:

Assam as a north-eastern state is one amongst those state which is exposed to multi-dimensional vulnerability to various hazards. Being in the greenest part of the country, the state has been key both in the roadmap of mitigation as well as adaptation to climate change. Understanding the importance and relevance of the above, GoI-UNDP program on Institutional and community resilience to disasters and climate change included Assam as one of key states for its implementation.

Under the above program which has many ambitious components, implementing scaleable demonstration projects on community resilience to disasters and climate change occupied an important priority. Thus, to initiate the action, Assam State Disaster Management Authority which is implementing the program in the State decided to conduct a base line assessment of three panchayats from three project districts of the State. This Report presents a detailed analysis of findings from the base line study. The report has been so arranged to elaborate three districts in serial order. Thus three Chapters are created in this report. Chapter I describes the findings of the base line study from a panchayat of Dhemaji district, chapter II describes the same about Morigaon and Chapter III about Barpeta. The strict has been prepared in strict adherence to the uniform outline developed by UNDP India.

Methodology:

The methodology for selection of the Panchayat involved an extensive discussion at the district and state level where the respective DDMA, Dhemaji, Morigaon and Barpeta played a crucial role. Based on criteria defined by ASDMA which includes vulnerability to multiple hazards, frequency of disasters, loss and damage factors and community dealing with recurring hazards, DDMA nominated the name of the Panchayat to the study team. The methodology for data collection was primarily divided into three stages, namely, Block level data collection through Key informant interviews. Panchayat level data collection through Panchayat level Focused Group Discussions (FGDs) and Key Informant Interviews (KIIs) and village/cluster level FGDs. While the Block level data collection was more focused on secondary data, Panchayat and Village level data collection were targeting primary data on priority. Thus a combination of primary and secondary data were collected involving respondents from different layers which included government officials and authorities, elected representatives, village elders, Panchayat level functionaries, CBOs, and community people in general.

Chapter I: Naruathan Gaon Panchayat, Dhemaji

1. Introduction:

1.1 General Introduction: S

Naruathan Panchayat is comprised of twenty revenue villages. Panchayat is 16 Km far from the Dhemaji District and Block Headquarter. It is located under the jurisdiction of Dhemaji Community Development Block and Dhemaji Revenue Circle. Hinduism is the major religion in the Panchayat while Assamese and Mishing communities are the major ethnic groups residing within the Panchayat. It is located in the western part of Dhemaji town.



Location Map of Villages in Naruathan Panchayat (Google Maps)

1.2 Geography:

Naruathan Panchayat is basically a low line area. Jiadhal river is flowing through the Panchayat. Due to constant changes in water flow and dumping of sand by Jiadhal river, the geography of the Panchayat changes after every flood. Huge plots of land are converted into sand dumps and physiology had changed significantly over the past few decades.

1.3 Climate:

The climate of the Naruathan Panchayat is similar to that of the district headquarter. It is Per-humid characterized by high rainfall, mild summer and winter and falls under cool to warm per-humid thermic-agroecological sub zone. The annual rainfall in the district ranges from 2600 mm to 3200 mm. Rainfall generally begins from April and continues till the end of September. The rainfall generally increases from south east to northeast. July is the rainiest month. On an average, there are about 200 days with 3.5 mm or more rain in a year. The relative humidity varies from 90 to 73 per cent. The temperature varies between 39.9°C in summer and 5.9°C in winter.

2. Demographic Profile:

2.1 Population:

The total population of the Panchayat is 6460 as per the household survey conducted by the health sub-center and anganwadi centers in the Panchayat for the year 2014-15. Of this, 4% (233) are between the age-group 0-24 months, 5% (322) are between the age group 25 months to 60 months, 9% (552) are from 5-10 years age group, 11% (703) are from 10-16 years age group, 50% (3248) are from 16-45 years age group and 21% (1402) are from 45-60 plus years. As per the Census 2011, there were 1298 households in Naruathan GP. As per the GP office, the numbers of APL and BPL households are 618 and 385 respectively, while, 295 households are neither APL nor BPL beneficiaries. Of the total APL households, 16% (97) are ST, 84% (521) are OBC while out of total BPL families (109) 28% are ST, (240) 62% are OBC and (36) 10% are General.

2.2 Education:

The literates as per the 2011 census were 75% of the total population in the Panchayat. Among the villages at Naruathan Panchayat No 2 Chakala Doloni village had the highest percentage of literates at 79%, whereas No 1 Kechukhana had the lowest percentage of literates at 63%. The educational infrastructure is also significantly affected by sand casting and flash floods. The recent flood during this year had dumped one primary school in Lawmuri village.

3. Infrastructure:

3.1 Household Amenities

As per the estimate by the GP office, 59% of houses are kutcha in the Panchayat, 33% are houses built under IAY which are semi pucca and 8% are pucca. However a certain proportion of the populations at the Panchayat living in the kutcha and semi pucca houses have traditional raised houses (Chang Ghar) associated with identity of Mishing communities in Assam. These houses help the people to live with floods while are not enough resistant to fire and heavy winds. There is a time based modifications made upon these "Chang Ghars" where RCC pillars have replaced bamboo/wooden pillars which are quite stronger.

3.2 Government Properties/Buildings (Roads, Bridges, Railways, Waterways, Buildings, Market Places)

There are a total of 29 anganwadi centers, 20 primary schools, 6 upper primary schools, 4 High and Higher secondary school, 1 Gaon Panchayat office, 1 Veterinary hospital, 2 Health

Sub-Centers and 1 cooperative society in the Panchayat. The most of the roads of the Panchayat are kucha. Many concrete roads are converted into concrete roads due to constant dumping of sand by the river while many bridges are washed away. The highest PWD road length is 1.5 km at Laumuri and the Garubandha block village while the lowest PWD road length is .5 km at Naruathan NC. Kolkata Powasaikia-Kolakata road which was once a concrete road now lies in miserable condition. There are no public boats operational at the Panchayat as the river does not have for 12 months and generally gets dried up in winters. Boats at household level exist in villages or are made through the banana tree to facilitate transportation during floods.

3.3 Transportation:

Among all the village at the Naruathan Panchayat Balijan have access to local road transportation 2 times a day, which is a mainly tempo service, while Garubandha Block, Naruathan, Chakala Doloni, Laumuri, Naruathan NC having access to whole day local vehicle for transportation from one place to another, other than these 6 village no other village have access to local transportation. There are 12 tractors available at the Panchayat while the highest number of tractor is available at No1 Kechukhana at 5. There are total numbers of 6 mini truck and 322 motor bikes are available at the Panchayat. Out of which mini trucks are available at 2 villages, the highest number of mini truck is available at No 1 kechukhana at 4 while the lowest is at Naruathan at 2.

3.4 Sanitation facilities

As per the data provided by PHE department, out of 1330 households only 859 households are having individual toilets at the Panchayat. Most people who do not have sanitary toilets use temporary toilets at HH level rather than going for open defecation as explained by PHED as well as the community during FGD. Only limited numbers are using open defecation. In case of Laumuri village certain HH have lost their houses and toilets due to the floods this year and are staying in temporary accommodation road side. They do not have access to toilets as of now. But the noticeable thing is that during flood both the sanitary and temporary toilets at the Panchayat get inundated by floodwater. Consequently, few households have constructed temporary raised toilets to get rid of flood water inundation. As per PHED 230 individual toilets are under construction at the Panchayat. However, there is no community toilet constructed yet by PHED or by any other.

3.5 Domestic Water facilities

Out of the total household at the Panchayat the majority of the households is dependent on tube wells (hand pumps) for domestic use. As per PHED there are 2 piped water supply system schemes available at Naruathan and Laumuri villages. However, the pipeline of PWSS laumuri has been washed away by floods this year and it is presently on defunct stage. There are 33 functional and 6 defunct tube wells at the Panchayat as installed by the PHED. There are 15 public taps available at Laumuri and Naruathan out of which 5 numbers of public taps are located at Naruathan and rest are at Laumuri. 5 open wells are available at the Panchayat while maximum numbers of household have sunk tube wells of their own. Jiadhal River is flowing through Naruathan, Powasaikia and Laumuri. Limited numbers of household use modern filter for filtrating the water while the majorities use the traditional filter made up of stone and sand and rests of the household consumes water directly from either tube wells, public tab or open well. Iron and arsenic are very high in the Panchayat. According to villagers, 2012 floods have caused significant changes by contaminating water.

3.6 Food facilities:

There are total 16 numbers of PDS agents in the Panchayat who provides basic commodities at subsidized rates. Out of 20 villages only 12 villages have a PDS agent at the Panchayat. Naruathan has the highest numbers of PDS agent at 3. There are approximately 54 numbers of grocery/ vegetable shops, of which 20 grocery/ vegetable shops are located at the Naruathan village while there are no shops at Baliganj, Ratua, Chechela, Jangal block, No1 Kechukhana, Naruathan NC, Baithak and No2 Chakala Doloni. 6 meat shops are there in the Panchayat of all of which are located at Naruathan village. Only one local market is there in Naruathan village.

3.7 Power /Energy:

Except the Chechela village, the entire villages have access to electricity. According to the data available with GP around 52% household in these 19 villages have electricity connection while the remaining families depend upon kerosene lantern. Only 27% of households have a gas connection with Naruathan having the highest numbers of gas connection at 20 % (70) while 73% of the household use fuel wood for cooking. Very limited, 57 households are solar light at the Panchayat.

3.8 Health Facilities /Health Access:

There are only two sub center at the Panchayat of which one is located at Powasaikia and another one is located at No1 Kechukhana. 4 ANMs and 12 ASHAs are providing health services at the Panchayat. 40 % immunization rate has been achieved through these Health sub centers. The nearest PHC is 7.5 Km far from the Panchayat, the nearest BPHC is 9Km far from the Panchayat, the district hospital is 19 km far from the Panchayat, while the nearest nursing home is 17 km far from the Panchayat.

3.9 Communication:

As per data available with Panchayat office, validated through FGDs at village level and transect walks, around 89% households have a mobile phone connection, 12% use the internet via mobile, 28% use radio and 38% have access to televisions. Traditionally villagers use rainfall and weather patterns in the hilly upper catchment areas of the Jiadhhal River to understand floods. The hilly location is visible from almost all the villages. Heavy showers, thundering, dark clouds up hills are taken as a warning of possible floods during the rainy season. Since the nature of the flood here is flash and can occur within a short period of time, the villagers often keep themselves mentally prepared. On the other hand Mobile phone based warnings are given to Gaon Budahs (Village Elders) by the administration who in-turn communicates to fellow villagers over the phone or through face-to-face contact. At times, Radio also broadcasts warnings and for this year, TV based warnings were also provided by the State government.

3.10 Religious Places/Buildings:

Every village has one or two Naam Ghar (Prayer halls). However, these prayer halls are not constructed as buildings and lack any infrastructure. These are also amongst places affected by floods. The Naamghars are very profound places for community discussions and decisions and can be platforms for inducing any successful and sustainable intervention.

4. Economy and Livelihood:

4.1 Land Use:

As per the data provided by the Agriculture department, 19.42% households are small, 37.36% households are marginal, 37.89% households are big, 5.52% households are landless in this Panchayat. The highest percentage of landless is found to be at Garubandha Block (18%) while there are no landless households at Ratua, Nepalikuthi, Chechela, Jangal block, No2 Kechukhana, Baithak. In case of marginal landholders, the highest percentage is at Baithak (80%) and the lowest is at Jangal Block (13%). Big landholders are highest in case of Jangal Block (87%) and lowest in the case of No 2 Powasaikia (12%).

4.2 Crops and Irrigation facilities:

There are 8 types of crops are cultivated at the Panchayat. Among these Sali paddy is cultivated in 359 Ha of land which is dry land and the season for cultivating Sali paddy is winter, Bowa paddy is cultivated in 497 ha of land, it is also dry land and the season for cultivating boya paddy started from November to February, Ahu paddy is cultivated in 312 ha of land, rain fed land and it is cultivated during summer, while potato is cultivated in 30 Ha of land and it is irrigated through tube well which is cultivated in April to May, Rabi(vegetables) are cultivated in 35 Ha of land which are irrigated through shallow tube well and the season for cultivation is winter, Mustards are cultivated in 175 ha of land irrigated through tube well and the season for cultivation is winter and Summer vegetables are cultivated in 15 ha of land which are also irrigated with help of tube well and the season for cultivation is summer.

4.3 Natural Resources:

There are several wetlands are available within the panchayat especially at Powa saiklia and Kalakata village where fishing is possible. A wetland covering 33 acres of land exist in GP. Attempts were made previously to preserve it 10-12 years back through cleaning. But nothing has been done in recent times. Generally Jiadhah River gets dried up during summer while another river is also flowing through Kalakata village which remains alive and also serves the purpose for fishing which is very renowned place for fishing which is used both for domestic and commercial value.

4.4 Livelihood matrix:

As per the data available with Gram Panchayat, There are 1569 farmers, 79 are agri laborers, 6 are engaged in traditional occupation such as barber, carpenter, mason etc, 26 are engaged in horticulture, 5 are engaged in guttery and sheep rearing activities, 8 are involved in poultry farms, 33 are working in garage or petty shops, 148 are doing private job while 101 are doing government jobs and only 3 are engaged in money lending.

4.5 Financial Status:

There is only one nationalized bank located at Naruathan village and there is only one regional rural bank at naruathan village. There 119 women SHGs operational in the Panchayat. Thegest number of SHGs group are at No 2 Powasaikia (24) while the lowest numbers of SHGs are at kalakata and jangal block 1 in each village.

4.6 Government Schemes:

The people of Naruathan Panchayat have received benefits under different category schemes of the government. There are 1476 job card holders in the Panchayat who are getting benefits under MGNREGS, 1199 women are associated with SHGs formed under NRLM and are accessing the befits, 1003 APL/BPL households are accessing PDS services via 16 numbers of distributors/agents who also hail from the Panchayat, 1180 beneficiaries

have received different services under NHM in the ongoing financial year, 423 houses are constructed under IAY, 308 adolescent girls have received nutrition support, 246 elders are receiving old-age pension. However, the community people are not satisfied enough as they have complaint about irregular and insufficient work under MGNREGS. Amount provided to the elderly people under old age pension scheme are very limited which is not enough for survival. IAY are helpful for the community in constructing safe housing while there are many gaps in the implementation of these programs. Limited numbers of raised hand pump and sanitary toilet at the panchayat. Such types of issues need to be addressed through any other government scheme.

5. Hazard and Vulnerability Assessment (HVA)

5.1 Disaster profiling:

Naruathan Panchayat had witnessed various forms of disasters such as flood, storm, fire drought. Every year floods cause brutal damage which resulted in huge loss of property, standing crops, infrastructure etc. sand casting is another major problem faced by people of Naruathan Panchayat. Traditionally houses are constructed with raised plinths in these villages. However, due to sand casting even raised houses and structures are now below the outside surface. Seasonal storms are also a major threat. Every year the temporary shelters and thatched houses suffer the hardest burnt from heavy winds caused by seasonal storms. Sometimes due to heavy storms, trees or electricity polls fall on the houses which damage the houses of many household at the panchayat. Fire is another major hazard for the Panchayat

5.2 Seasons of disasters

Flood often occurs in the Panchayat from April to October, Storm occurs during March to April, Fire accident can occur at any time, but according to the villagers it occurred mainly during December to February, drought and lightning are seen from March to May while the risk of an earthquake is unpredictable and can take place at any time and season.

5.3 Hazard assessment:

Flash floods and sand casting are the most frequently visiting and devastating hazards for the Naruathan Panchayat. Sand deposits are a major threat faced by the community affecting land availability for shelter and agriculture. Seasonal storm and drought are next to Flash flood and sand casting but the extent of devastation is not as vast as a flash flood. Fire accident is another hazard at the Panchayat.

5.4 Vulnerable populations and infrastructure:

Populations at risk in a disaster situation include the disabled, elderly and children. This large and growing segment of the population is in many ways more vulnerable to disaster than other people and has specific needs in emergency situations. Pregnant and lactating women, those who are living at Ratua, Chechela, Naepalikuti are also vulnerable to flood as big vehicle such as ambulance or any four wheeler vehicles cannot run due to lack of proper road. Wooden bridges in Powasiakia village are very much vulnerable to flood as it is lying in a poor condition. Another RCC bridge has been partially washed this year, which is located at the end of the village Laumuri connecting it with Kechukhana. To bridge the washed away portion a bamboo bridge is constructed. Many villages namely Kolakata,

Baithak, Kechukhana etc., bamboo bridges are constructed by the community after the floods for movement in the mainstream Panchayat area.

5.5 Exposure to vulnerability

After the devastation caused due to flash flood, the majority population of Lawmuri village are presently residing temporarily roadside upon makeshift houses. A school was recently dumped and washed by river Jiadhal near its catchment area at Laumuri. The Panchayat office itself gets inundated. The struggle becomes harder due to the unpredictable nature of the river which tends flash and wash everything coming on its way. As mentioned earlier, many concrete roads and bridges were either washed or dumped with sand, making them unsuitable for transportation. Critical infrastructure like water supply pipes were also washed away. One Health Sub-center building has been washed away by floods in 2012 at Kechukhana which is presently operating in a school compound.

6. Human Resources:

6.1 Status of civil society:

There is no such NGO is operational presently at the Panchayat but NGO like IGSS (Indo Global Social Service Society) and the Rural Volunteer Centre had previously worked on various issues such as repairing work of embankment, providing shelters for few affected people of the village, Footbridges, water filtration, cash for work programs, construction of roads and raised tubewells etc

6.2 Status of Community Based Groups:

Naruathan Panchayat is having good numbers of community based groups. There are total 119 numbers of women SHGs, of which the highest numbers of SHGs are at No 2 powa saikia (24) and the lowest numbers of SHGs are on Kalakata and Jangal block 1 at each village. Only SHGs (female) are functional in the GP and no other formal groups like farmers' clubs are in existence, as people don't have adequate awareness and linkages with benefits from such groups.

6.3 Government Institutions and staff:

There are total 135 government staff and functionaries from P&RD, Agriculture, Education, Revenue, Animal Husbandry and Schools. Of them, 96 (71%) are males and 39 (29%) are females. The maximum strength goes to schools which are having 125 (93%) teachers and staff. Highest number of teachers and other staffs are serving at Naruathan village at 37 while the lowest numbers of teacher are serving at Garubandha at only 1. Whereas there is not a single school is located in 6 villages of the Panchayat. Apart from the above, there are 12 ASHA and 4 ANMs in the Panchayat functioning under the health department.

6.4 Assessment of community capacities required to address the disaster in all four phases

Traditional houses are mostly with raised plinth (chang ghar) which are traditional coping measures for floods. They also make banana tree boats, temporary raised platforms at household level are constructed in the beginning of the rainy season as preparedness. In response, Bamboo Bridge is constructed by the community after the floods for movement in the mainstream Panchayat area. Though the community people try to evacuate the vulnerable families to a safe place, but this evacuation is not performed in a planned manner. There is a lack of sufficient skilled manpower, equipment and resources for

effective response. No safe shelter exists at Panchayat. Relief supports are provided, but are often late and insufficient. For Rehabilitation, many community people were observed temporarily settled upon the roadside as there is no sufficient system and structure in place for rehabilitating those losing their shelter and livelihood due to disasters. The same is true in case of reconstruction as well.

6.5 Status of trained community volunteers in the village:

There are 4 numbers of trained first aid person at the Panchayat of which 1 is in Nepalikuthi, 2 are in Naruathan, 1 is at Powasaikia. Apart from these ASHA and ANMs are having basic skills in first aid and are of some help to the community during disasters. However, community has its own feeling and obligation, helping each other in emergencies.

6.6 Police outpost and Fire stations:

There are no police station and police outpost in the GP. The nearest police station is 18 km far from the Naruathan Panchayat. During the heavy rain Panchayat becomes inaccessible due to poor condition of roads. The nearest fire service office is also 18 km far from the GP.

7. Preparedness:

7.1 Availability of Panchayat Disaster Management Plan

There is no Disaster management plan available at Naruathan Panchayat. After 2012 flood community people have attended one demonstration programme on rescue and first aid conducted by NDRF at Naruathan village which is still recalled as the program was nicely conducted. Nothing much has done after that. None of the school in the Panchayat has a school Disaster management Plan in place.

7.2. Resource Inventory and Availability of Equipment's at Panchayat level

No such resource inventory has been prepared by the Panchayat yet. However, there is only 1 dumper is available at Naruathan village. There are 12 tractors, 6 mini truck and 322 motor bikes are available at Panchayat which can be used during the emergency.

7.3 Availability and status of disaster shelter:

There is no safe shelter in the GP as per the PRIs, since the river Jiadhhal is unpredictable. In extreme emergency situations as was last seen in 2012, people were taken to schools in Dhemaji town which are more than 16 kms away from the GP. Some of the schools in the Panchayat which were earlier upon higher grounds/with raised plinths are now upon the same level as the outer surface because of constant dumping of sand. Emergency shelter is a bare necessity for the villages for meeting any emergency flood situation.

7.4 Measure taken to disaster risk reduction:

The houses are mostly with raised plint (chang ghar) which are traditional coping measures for floods. But, these are not a multi hazard resilient and thus at times are vulnerable to storms and/or fire. Due to regular sand deposits make even high plinth houses touch the surface. Apart from this every household has the skill of making Banana tree boat for transportation. Flood warning is provided to the Gaon Budah via mobile. There is no community warning dissemination mechanism in place except individual information sharing or man-to-man warning dissemination. There is no public address system in place/use. Radio also disseminated warning for 48 hours flood probability while rainfall based

calculations is another traditional means of calculating probability of floods. Before flood community people also keep some dry food aside for emergency situation.

7.5 Community Involvement in various stages and phases:

Community people assist one another in case of any emergency at the village. After the 2012 flood, at Kechukhana half of the RCC bridge washed away by flood after that community construct temporary bamboo foot bridge for movement and mainstream village area. Relief committee is formed by the Circle Office having the Gaon Burah as the leader to manage relief distribution during and post flood.

7.6 Use of local knowledge, skill in disaster management:

1. **Emergency Transportation:** Local banana and bamboo boats are the principal means of transportation during floods for most of the villages. The technologies used for making these are local with local materials.
2. **Resilient Housing:** Houses with raised plinths and raised platform (Cheng ghar) are common in the entire GP. This is a result of frequent exposure to floods and gradual adaptation.
3. **Weather based early warning understanding:** The villages under the GP are quite capable of understanding the time of occurrence as they observe the weather especially the rainfall and clouds upstream. This enables them to plan for their life safety on a routine basis during flood season.
4. **'Shramdan' (Donation of labour):** It was observed that many villages had lost their roads and bridges, it is by community that they have managed to construct temporary bamboo bridges which enable their transportation during normal times. These bridges though are often washed away by every wave of floods are constructed again and again for which the community donates labour and resources.
5. **Traditional skills:** An average villager is skilled in swimming and thus has this life saving tool with him/her. Children are brought up in such a way that they know swimming from their childhood.

6. Conclusive Analysis:

- a. As with frequent exposure to floods, the people of the Panchayat have learnt to cope with floods and possess life saving skills like swimming.
- b. There is existence of community feeling and still the concept of joint labor donation (Shramdan) can be seen in many of its villages.
- c. The Panchayat has high vulnerability if drinking water, shelter, sanitation is looked at. There is no emergency shelter or place within the Panchayat area. Those households living away from the river and having "chang ghar" are relatively less vulnerable. However, as the river intends to change its course, it has the potential to wash even stronger infrastructure, thus multi-purpose flood shelters in safe places are required. It is also to be mentioned that "Chang Ghar: with modern orientation can be best demonstrations for any other flood affected region.
- d. There are no institutions to take care of DRR and ER needs of the Panchayat. Few organizations who have intervened with relief and such CBDRR concepts have not been able to sustain impacts after their withdrawal since these were not mainstream with Panchayat.
- e. The existing institutions like schools which could be potential shelters are now in certain below the ground level while some are equal. There is not a single

school, which will be above flood water level in case of a major flood. Thus, emergency shelter apart from those having own raised houses and "Chang Cghar" is not available.

- f. Health Sub-centers also roar under water, especially the one at a Powa saikia village. The HSC at Kechukhana village has already lost its infrastructure to flood. However, it is operating in a school compound keeping health basic service delivery accessible to the affected villages. As per community, no sorts of services are provided while there is water in the village by any department and there was a kind acceptance among the members in all villages that such services will not be received in near future.
- g. It is important to understand that still the community feeling and sentiments are playing a major role in routine life and risk reduction. Be it 'Shramdan' to construct temporary bamboo bridges or helping one another in accessing emergency health services during floods. This can be an asset for any CDBRR intervention if implemented as hard to reach villages like Kalakata.
- h. People are accessing welfare schemes implemented by the government, though the quality and adequacy are debatable. Resources of IAY are utilized to construct raised houses, but for those beneficiaries who again lost their houses after construction in flood, there is no system of re-construction
- i. So far as economic indicators of resilience are concerned, there are not enough alternative sources of livelihood available within or near the Panchayat. Among the preferred credit sources, still money lenders occupy a healthy position.
- j. Due to constant sand disposition, the ecological balance of the villages has been severely affected. There are wetlands in villages like Powa Saikia and Kalakata. However, villages like Kechukhana, Nepali Kuti, Laumuri suffer acute water crises, particularly for livestock as the river get dried up and other sources had been dumped with sand. There were incidents of cows up-rooting handpumps during dry periods and extreme heat in search of water at Kechukhan village.
- k. Shelter, WASH and livelihood still occupy two major backbones for enhancing the resilience of communities living in this Panchayat.

7. Recommendation and Action Plan:

- **Scientific Investigation:** One of the major action under the project recommended based on the observations and findings is to understand the scientific basis and the trend of the river changing its course and dumping sand. The study must be targeted towards design of shelter, water treatment mechanism, design of toilets, cropping pattern etc in areas affected by sand casting.
- **Utilization of sand filled land:** The project should strive to identify and demonstrate how the newly sand filled land can be immediately utilized to benefit income and ecology. Due care should be taken in the design of such intervention keeping in mind the sensitivity, feasibility, acceptance and sustenance considering, physical and social features of the communities residing in villages.
- **Emergency Shelter:** This is a bare necessity to evolve a design and implement the same with adequate resources to construct a couple of multi purpose shelters either reinforcing the existing schools or as new constructions. Here in particular, sand casting and constant changes in geography must be considered a scientific design.

- **Advocacy:** In order to improve resilience of the people, the project must advocate to improve road conditions in the villages where bridges have been washed. This is a major challenge which increases risk of the population living within these villages even in normal times.
- **Ecological rejuvenation:** Any resilience building plan in the Panchayat must also focus on reviving the lost ecological balance and preserving the existing ecologically important assets like wetlands. The rejuvenation is particularly needed in villages hit by water crisis for livestock like Kechukhana while preservation is most needed at Powa Saikia and Kalakata village
- **Creating a balance:** Efforts must be taken to bridge the existing gaps in the development scenario between villages, thereby focusing more upon least developed and hard to reach villages. To name them, Kalata, Baithak, Nepali Kuthi, Jungle Block, Chechela, Ratuwa are the major ones. While Laumuri is the one which is recently devastated by floods.
- **Drinking water:** It has been found that water from tubewells are iron and arsenic contaminated. IGSS (NGO) attempted to demonstrate bio-sand filters, but this has remained limited to only those who have received such a filter from the Organization at Laumuri village. Considering the complaints of poor quality of drinking water at Kechukhana and neighboring villages, provision of water treatment facility in these places will also be an important element to look into.
- **Institution building:** All the above above proposed must be mainstreamed through existing institutions like Panchayat and CBOs in the Panchayat. This will require adequate capacity building of PRIs, CBO members, village elders and leaders. Panchayat and Village level resilience building plans need to be chalked out by capacitating the institutions. Resources must be identified, channelized and mobilized for implementation of the plans which is of prime importance.
- **School based Risk Reduction:** It is essential that at least one school from those villages having a school is created as a model school for school based resilience building initiative. This will require capacity building and handholding support to school stakeholders with provision of resources.

Entry points:

- **District and Block level induction cum launch:** It will be very much essential to inform and aware the stakeholder, especially DDMA, DRDA, ZIIa Parishad, BDO, CO. Social Welfare, Agriculture, PHED, Water Resources, PWD (RR&B) etc about the project and its results and to ensure their involvement, cooperation for the same.
- **Identification of Technical Partners:** At the beginning, technically competent agencies must also be identified as partners who can implement identified actions. The technical component must be viewed with two angles one is pure science, such as for scientific investigation, design and construction of structure and the other is social science where the community mobilization, capacity building and involvement are dealt with.
- **Design of effective Coordination structure:** At the beginning multi layered structure should be defined for actions to be implemented involving responsible partners and stakeholders. Accountability, responsibility, M&E etc. must be

established in the beginning to ensure smooth operation. It will be very critical how the stakeholders are sensitized and involved in this regard from District to Panchayat levels.

- **Panchayat level launch and sensitization:** The Panchayat must be well informed about the project, its process, their role and expected results in the presence of valued individuals and officials who will be instrumental in the implementation of the project. This can be done centrally at the Panchayat or any place outside accessible to people of the Panchayat. This sensitization must be followed by village level meetings.
- **Making of CR plans:** The community resilience plans should be chalked out either at village level or at Ward level for convenience. This should mark the beginning of the actions of the project. The already identified actions should be supplemented with village level has identified actions.

Chapter II- Morigaon

1. Introduction:

1.1 General Introduction:

The Tatikata Gaon Panchayat (GP) is situated at the North Eastern corner of the district Morigaon, Assam. It comprises of four revenue villages namely, Tatikata, Bheleuguri, Leruamukh, and Rangrai Chapari. The Panchayat is situated near the Block Headquarter Moirabari. The Tatikata revenue village is on the opposite side of the BDO office while the district headquarter is approximately 27 KM away from the Panchayat. The Nagaon – Moirabari -Laharighat road passes through the southern side of the Panchayat. While three villages have road connectivity, the Rangrai Chapari village depends on boat for transportation as it is a chor (island)



Location map of villages of Tatikata GP (Source: Google Map)

1.2 Geography:

Tatikata GP is a flood plain of the Brahmaputra. As mentioned Rangrai Chapari is a river island on the Brahmaputra River. The area is more susceptible to flooding and erosion because of its location. Other three villages which are located at southern bank of the Brahmaputra have many rivers created structural unevenness due to presence of off streams, dumping of sand by the mighty Brahmaputra. Thus sandy soil and marsh are structural features.

1.3 Climate:

The climate in the entire district is Sub -tropical to semi dry hot in summer and cold in winter, which is also the case with the GP. Average rainfall ranges between 1500 mm. to 2600 mm with maximum rainfall occurring between July to September. Average humidity is on the higher side of the district at 75%, which is also the case for this Panchayat. It is seen that summer season witnesses maximum temperature between 38-39 degree C while winter season witnesses minimum temperature between 6-7 degree C.

2. Demographic Profile:

2.1 Population:

The total population of the Panchayat is 13075 as per the household survey conducted by the health sub-center and anganwadi centers in the Panchayat for the year 2014-15. Of this, 6% (710) are between the age-group 0-24 months, 7% (928) are between the age group 25 months to 60 months, 26% (3440) are from 5-13 years age group, 23% (3007) are from 19-35 years age group, 17% (2264) are from 36-60 years age group and 11% (1383) are 61 plus. As per the Census 2011, there were 2442 households in Tatikata GP. As per the GP office, the numbers of APL and BPL households are 1318 and 735 respectively, while 389 households are neither APL nor BPL beneficiaries. Of the total BPL households, 1.36% (10) are SC, 0.68% (5) are OBC and remaining 97.96% (718) are General Caste households while 100% of the APL households are General.

2.2 Education:

The literates as per the 2011 census were 44.78% of the total population in the Panchayat. The Tatikata Pathar village had the highest percentage of literates at 47%, while the lowest was recorded at Rangrai Chapori at 31%. Though no official data on the break up of education, level of literates exists, approximate data by GP office and villagers during the FGDs shows the highest percentage of secondary school and college attended population at Tatikata Pathar and lowest at Rangrai Chapori. Flood and erosion had ruined the educational infrastructure at the rangrai Chapori village and is a major threat to educational development in the village.

3. Infrastructure:

3.1 Household Amenities

It has been observed that housing is not safe and resilient for the majority of households in the Panchayat. As per the estimate by the GP office, 80% of houses are kutcha in the Panchayat, 13% are houses built under IAY, 6% are pucca and 1% are RCC. Housing is a major concern for villagers in Leruamukh and Rangrai Chapori mainly those who had their land and property due to flooding and erosion. Still a good number of households in Leruamukh village are residing upon the embankments making temporary thatched houses. As the Rangrai Chapori is an island no concrete houses exist in the village and the present housing patterns indicate a sense of temporary settlement, which are destroyed by floods every year and are being re-build.

3.2 Government Properties/Buildings (Roads, Bridges, Railways, Waterways, Buildings, Market Places)

The Panchayat is very dynamic in terms of its infrastructure. There are a total of 22 anganwadi centers, 12 primary schools, 4 middle schools, 1 Gaon Panchayat office and 3 Health Sub-Centers in the Panchayat. While Tatikata Pathar is connected via the Moirabari-Lahorighat PWD road (total road length of Tatikata village is 6.5 KM including both concrete and kucha roads), a Panchayat road connects Bheleuguri (3 KMs) and Leruamukh villages (2 KMs both kucha and pucca). In Leruamukh road is in worst condition because of erosion and

floods. Ranrgi chapari doesn't have any road. For transportation, two motor boats are allocated from GP for public transportation. 5 Private boats to cross the stream of Brahmaputra are also available from Leruamukh to Rangrai Chapori.

3.3 Transportation:

The transportation in the Panchayat is dependent upon road and waterways. The three villages having road connectivity are having access to road transport mainly tempo services. Tatikata Pathar which is covered by Moirabari-Lahorighat road has public transportation access through buses and tempos. This also serves as the dropping point for other three villages. The tempos connecting three villages ply eight times a day. There is a total of 12 tractors, 4 trucks and approximately 71 motorbikes which facilitate the road transportation services between the three villages having road connectivity while boats frequency is a thrice daily for public transportation in the Rangrai Chapori village. It is to be noted that for reaching to the boats one has to cross all the three villages namely Tatikata Pathar, Behlouguri and Leruamukh. Private boats are running based on requirement of the villagers.

3.4 Sanitation facilities

Sanitation is a major issue facing the GP. It becomes more critical when it is compared with the situation of floods in the Panchayat. For 2442 households there are only 223 toilets in existence as per the data provided by PHED, Dhing Subdivision. While the rest of the household either go for open defecation or use Kucha unscientific toilets which are categorized as equivalent to open defecation. During floods these temporary structures are destroyed and water gets contaminated. People still are not enough sensitized or conscious about safe and resilient sanitary practices and the need is not prioritized in this regard.

3.5 Domestic Water facilities

Tube wells (hand pumps) are the major source of drinking water and water for domestic use. There is no piped water supply system in the Panchayat. As per the PHED there are 66 functional and 16 defunct tube wells (hand pumps) in the Panchayat installed by the PHED. While the majority of households have own tube wells (hand pumps) which are used to meet the domestic water needs. A few households also have small fish tanks, but the water is not used for household needs rather it is solely for fish rearing. In certain cases, these tanks are created through the digging of soil for raising house plinths. As per the data provided by PHED, there is only one open well in the Panchayat. People have gradually shifted to hand pumps for domestic water use. However, it has been observed that the iron content is high in the water from hand pumps. A test conducted in one of the schools at the Tatikata Pathar village reports high iron content. The use of filters is also very limited. Very few villagers use modern or traditional sand based filters, the rest of them consume water directly from hand pumps.

3.6 Food facilities:

There is a total of 12 PDS agents/distributors in the Panchayat who supply essential commodities at government subsidized rates. The Tatikata Pathar village has the highest

number of such agents at six while Bhelouguri village has the lowest number at one. There are approximately 26 grocery/vegetable shops, of which 20 are located at the Tatikata Pathar village while there is no such shop in Rangrai Capri village. 5 meat/fish shops are there in the Panchayat 4 of which are at Tatikata Pathar and 1 at Bhelouguri village. Only one local market exists which is located at the Tatikata Pathar village. Rabi crops are seen as the principal crops since rice is uncertain. Land fertility has declined as per the villagers over the years due to the use of chemical fertilizers. Storage facilities, especially cold storage are not available within or near the Panchayat which is much needed.

3.7 Power /Energy:

Except the Rangrai Chapori village, all three villages have access to electricity. As per an estimate by the Panchayat office around 88% households in these three villages have electricity connection while remaining depends upon kerosene lantern. Rangrai Chapori being an eroding island has no electricity connection. Only 17% of households have a gas connection for cooking with Tatikata Pathar having the highest number of connections while there is no gas connection at Rangrai Chapori. Still the major portion of the population depends upon natural sources such as paddy and jute straw, dried cow-dung and fuel wood for cooking. It is on the one hand a pollution source while the availability is a major challenge during flood season. As cited by community people, lack of purchasing and maintenance power is the main cause for limited numbers of gas connections in the Panchayat.

3.8 Health Facilities /Health Access:

The Panchayat is located near the block headquarter by virtue of which it has access to a First Referral Unit (a combination of PHC and CHC) within 1 KMs from the Tatikata Pathar village. The unit also provides ambulance services. There are a total of three health Sub-Centers under which there are 5 ANMs and 15 ASHAs providing health services in the Panchayat. For the year 2014-15, an exuberant 88% immunization rate has been achieved through these HSCs. The highest achievement is found to be at Bhelouguri while the lowest at Rangrai Chapori. From the Tatikata Pathar village the district hospital is around 27 Kms while the nearest nursing home is around 28 KMs. The same for the Rangrai Chapori village is 33 Kms and 34 Kms respectively. However, for all the villages during floods access to health facilities becomes a major challenge even though the FRU is nearby. The worst situation during rainy season is faced by Rangrai Chapori and Leruamukh villages as the former has no road and the later has them in worst condition.

3.9 Communication:

As per an estimate by Panchayat office, validated through FGDs at village level and transect walks, around 61% households have a mobile phone connection, 15% use the internet via mobile, 3% use radio and 30% have access to televisions. The use of radio has gradually reduced to a minimum. There is more prevalence of mobile based communication for early warning as relatives, friends communicate from upstream areas about the increasing levels of water in the river. Villagers also get access to warning through TV occasionally when news of floods and increasing water level are broadcasted in local news channels. Those

who have access to TV share this news with fellow villagers. Gaon Budahs (village elders) are communicated by Revenue Circle Office to be prepared through phone calls and meetings. These are the means used for early warning using modern mediums. There are no warning systems for other hazards like storms and fire. Since the people have seen the river for years, the level of river water is an indicator for them along with rainfall. Months with extensive rainfall are bound to result flood like situation and thus the villagers remain mentally prepared. People traditionally have a culture of gathering in the evening at a local market in Moirabari which is near to the Panchayat, this market often serves as a place of discussion and communication. Any news coming from nearby districts and upstream areas is shared as warning during flood season. Mosques have traditionally been used as warning dissemination centers in case of embankment breaching when people had to be evacuated. This year also announcements were made using PA systems placed in the mosques for evacuating to safe places as the embankment was breached.

3.10 Religious Places/Buildings:

There are some religious places and buildings in the Panchayat. The religious places are mainly focusing on aspects related to overall religious well being of the community. Since the Panchayat is dominated by Muslims, mosques are the places of religious worship. The mosques also serve the need for early warning dissemination, especially in case embankment breaching. After prayers community issues are also discussed. These mosques are equipped with PA systems and are useful during emergencies.

4. Economy and Livelihood:

4.1 Land Use:

As per the data provided by the Agriculture department, 35.25% households are landless, 39.5% are marginal, 15.75% are small and 8.75% are big land owners in this Panchayat. The highest percentage of landless is found to be at Tatikata Pathar (38%) while the lowest percentage is at Leruamukh (32%). For marginal landholders, the highest percentage is at Leruamukh (42%) and the lowest is at Tatikata Pathar (37%). Big landholders are highest in case of Leruamukh (10%) and lowest in case of Tatikata Pathar and Rangrai Chapori villages (8% each).

4.2 Crops and Irrigation facilities:

The cropping pattern in the Panchayat is mainly divided into three crops, namely, Sali paddy, winter paddy and jute/vegetables. Sali paddy is cultivated in 520 Ha of land, of which highest is in highest is Tatikata Pathar (250 Ha) and the lowest is in Bhelouguri (65 Ha), the season for cultivation is July to October. Of the total land cultivated under Sali paddy, 38.46% (200 Ha) while the rest 61.54% (320 Ha) is rain-fed. Winter paddy is cultivated in 420 Ha of land, of which highest volume of land is cultivated at Rangrai Chapori (165 Ha) and lowest volume is cultivated at Bhelouguri village (80 Ha), of this 66.66% (280 Ha) is irrigated and the remaining 33.33% (180 Ha) is dry-land. This is cultivated from June to November. Jute and vegetable are the major crop cultivated in 685 Ha of land, in this highest area is cultivated at Tatikata Pathar (280 Ha) and the lowest area is cultivated at

Leruamukh (105 Ha). The irrigated land amounts to 41.60% (285 Ha) while the rest is dry-land (400 Ha). The season for cultivation is February to May. As per the communities consulted through FGDs, the productivity of jute/paddy is high because the period is non-flood period and also the farmers use modern technologies. However, cold storage is a major shortfall when it comes to better marketing. Paddy especially Sali is very uncertain because of current floods. The community has made a significant adaptation by shifting principal crops to winter (Rabi) season. As can be seen in figures the cropping significantly increases at Rangrai Chapori (the island village) after the flood season, however, gradual land erosion in Leruamukh and Rangrai Chapori villages poses a significant threat to food security.

4.3 Natural Resources:

The Panchayat doesn't have any special area sites like sanctuaries or forest reserves. River Brahmaputra is the principal water body flowing through the Panchayat. Though dependency on fishing and/or any other river based resources is very less. The Rangrai Chapori is rich in shrubs called Assam Catkin Yew (Kashful) used for different household needs such as making of roof and wall for thatched houses, carpet and mattress making etc. These have both domestic and commercial value. Water availability is good, but arsenic and iron content are reportedly high in the villages. The soil is considered to be productive, however, due to extensive use of chemical fertilizers and pesticides the productivity of land has declined and now it is dependent on extent of use of these chemicals.

4.4 Livelihood matrix:

As per the Primary Census Abstract of 2011 published by the Census of India, There were 3769 workers, of which 3527 (93.58%) were main workers and 242 (6.42%) were marginal workers. Of the total main workers 1081 (30.65%) were farmers, 921 (26.11%) were agricultural laborers, 40 (1.13%) were household industry workers and 1485 (42.11%) were other workers. Among the marginal workers, 50 (20.67%) were farmers, 96 (39.66%) were agricultural laborers, 6 (2.48%) were household industry workers and 90 (37.19%) were other workers. It has been found during the FGDs and KIIs that still the majority of the population depends upon daily labor which are included in the Other category. Erosion and flood significantly affect occupation of the people. Vegetable and jute as major Rabi crops are promising good earning opportunity to the people, however, a cold storage facility at nearby places can promote or increase the overall income as mentioned above.

4.5 Financial Status:

The Panchayat has one nationalized bank located at Tatikata Pathar and there are two other Customer Service Points (one each of a nationalized bank and regional rural bank). Though no official figures are available, but there are good numbers of moneylenders in the Panchayat providing credit to villagers in need. There 80 women SHGs operational in the Panchayat, but, are not among the preferred sources of credit because of limited funding capacities as per the community. Preference is given to informal sources like a moneylender to meet the routine credit needs as there are limited process requirements and availability is

easy. Though rates are high, long and tedious processes and associated complexities affects credit accessibility from formal channels like banks.

4.6 Government Schemes:

The people of the Panchayat have received benefits under different category schemes of the government. There are 2496 job card holders in the Panchayat who are getting benefits under MGNREGS, 880 women are associated with SHGs formed under NRLM and are accessing the benefits, 1878 APL/BPL households are accessing PDS services via 12 nos of distributors/agents who also hail from the Panchayat, 1524 beneficiaries have received different services under NHM in the ongoing financial year, 330 houses are constructed under IAY for BPL families, 402 adolescent girls have received nutrition support in the month of September this year, 420 elders are receiving old-age pension and 50 Nos of students have received scholarships. However, the satisfaction level among the people is not up to the mark. IAY houses are not constructed in the Rangrai Chapori Village as it is an island, there is no SHG formed under NRLM in this village. There are issues related to lack of sufficient work, irregular and insufficient work, delay in payment of wages etc. in case of MGNREGS. Though the majority of respondents considered IAY, PDS and Old-Age pension as most useful for those who are accessing the benefits. Still a good number of families are residing upon the dyke (embankment) at the Leruamukh village without proper shelter and sanitation facilities. The Swachh Bharat Mission is at an embryonic stage and sanitation needs of all the villages are yet to be addressed sufficiently through any other government scheme.

5. Hazard and Vulnerability Assessment (HVA)

5.1 Disaster profiling:

This Panchayat had witnessed a few of the furious forms of disaster. Floods due to embankment breaching cause severe devastation for the Panchayat. Even in August, 2015, there was a severe flood caused embankment breaching on the Brahmaputra. This has resulted in loss of property, crops and basic facilities to the tune of lakhs of Rupees. A newly constructed health sub-center had been affected by erosion, which was ultimately demolished after all attempts to prevent erosion failed at the last moment on the bank of the river. Due to floods and erosion, many villagers are left homeless and their livelihood have been snatched. . Erosion is the most threatening s facing the Leruamukh and Rangrai Chapori villages. As per the villagers, more than half of the land of Leruamukh village had been washed away due to erosion which is ongoing. There were also incidents of fire in the past and it also forms part of a major hazard. The road at Leruamukh village is not conducive for any rescue vehicle to reach, while no road connectivity keeps the Rangrai Chapori highly vulnerable to such fire accidents. Seasonal storms are also a major threat. Every year the temporary shelters and thatched houses suffer the hardest brunt of heavy winds caused by seasonal storms. Post flood epidemics are also witnessed in the form water borne diseases like diarrheal diseases. As the entire district falls in zone V as per the BMPTC atlas, the risk of high magnitude earthquake can not be overlooked though the housing structures are not as vulnerable as an urban agglomeration, however, the location of the Brahmaputra river and its tendency to erode and change direction can be a significant threat to the existence of the Panchayat in the context of an earthquake.

5.2 Seasons of disasters

As per the assessment conducted through FGDs, transect walk and key informant interviews, flood often occurs in the Panchayat from July to October, Erosion occurs throughout the year at Leruamukh and Rangrai Chapori villages which is at its peak during May to August, Seasonal storms are seen mainly during April to June, Fire incidents can occur any time, however most cases are reported from November to February, epidemics are seen from August to October while the risk of earthquake is unpredictable and can take place at any time and season.

5.3 Hazard assessment:

Considering the scenario of the Panchayat and based on the assessment done, it can be inferred that floods and erosion are the most frequently visiting and devastating hazards for the Panchayat. The River is constantly moving inwards eroding land and property. Floods caused by breaches in embankment are the most severe threat. Thus, floods and erosion are on the first priority. Seasonal storms are next to flood and erosion. Though the extent of devastation is not as vast as floods, still for those who are affected, it causes irreversible damage. Fire accidents can be placed at the next priority level as it needs awareness and sensitization, and as well as improvement in infrastructure. Epidemics are seen as a result of flood thus can be placed at the next priority.

5.4 Vulnerable populations and infrastructure:

1383 persons are above the age of 60 while there are 1638 children under 0-5 years age group which together make 23.11% of the total population who are more vulnerable to disasters. Pregnant and nursing mothers, particularly those at Leruamukh and Rangrai Chapori are highly vulnerable during rainy season as these villages become inaccessible to the ambulance service. Since all the houses at Rangrai Chapori are kuccha, the risk of fire accidents and storms are high along with those residing upon the embankment at Leruamukh village. The infrastructure of Leruamukh village in total is highly vulnerable because of recurrent erosion.

5.5 Exposure to vulnerability

It can be said that the entire population at Rangrai Chapori and Leruamukh are highly vulnerable because of the proximity to the river. The health sub-center building had already been demolished due to erosion. There is one raised platform in Leruamukh village which is on the verge of erosion. Two school buildings have been lost to erosion and floods over the past. No proper school building exist in the Rangrai Chapori village at present and the schools are running in makeshift infrastructure. Those households who have lost their house and property and presently residing upon the dyke are still vulnerable. Children attending schools outside the Rangrai Chapori village are crossing the river frequently and are vulnerable to boat capsizing. Though no such incident had been reported so far. Health services are delivered through boat clinics and visiting ANMs however, pregnant and lactating mothers and children are very highly vulnerable at Rangrai Chapori and Leruamukh. During floods this is the case with all villages. Since agriculture is one amongst the principal occupation, gradual erosion of land renders a severe threat to livelihood

sustainability in the entire Panchayat. This is the pushing factor for migration. Embankments are most trusted shelters which itself is vulnerable to erosion. Few schools are accessed for shelter by villagers from Bhelouguri and Tatikata Pathar while these are not having adequate facilities. The distance of these schools from Leruamukh and Rangrai Chapori make them inaccessible to villagers from these villages, thus, they are rendered vulnerable to take shelter upon embankments.

6. Human Resources:

6.1 Status of civil society:

There is an NGO based in the Tatikata Pathar village named Social Economic Development Organization (SEDO). It is presently working under the Swachh Bharat Mission to improve sanitation facilities in collaboration with the PHED. It is covering 4 Panchayats including the Tatikata Panchayat. There are 12 male and 3 female members working with this NGO. However, their work is new and are not much familiar among community people. During the FGDs it has been found that the assistance and support from civil society groups had been perceived to be non-existence. The villagers will recognize the support provided by the Start Cement CSR group during this year's flood. However, there is no infrastructure or manpower of the in and around the Panchayat. The group only arranged relief as external aid.

6.2 Status of Community Based Groups:

The Panchayat is having a good reserve of community based groups. There are total 80 SHGs, 4 farmers' clubs and 3 youth groups in the Panchayat. However, if we look at the village wise picture, there are variations. Most of these institutions are located at the Tatikata Pathar village (70 SHGs, 4 farmers' club and 2 youth groups) while there is no such institution in the Rangrai Chapori village. It has been observed that most facilities and services are concentrated upright in the Tatikata Pathar village as it is centrally located, near to the block headquarter while Rangrai Chapori lacks basic facilities on the ground that it is an island which may or may not exist in the same location in near future. Leruamukh also deflects a similar picture, even though it has 5 women SHGs formed under NRLM. No other CSO/CBO exists in that village.

6.3 Government Institutions and staff:

There are total 108 government staff and functionaries from P&RD, Agriculture, Education, Revenue, Animal Husbandry, Schools and Police Stations. Of them, 89 (82.41%) are males and 19 (17.60%) are females. If we look at this picture maximum strength goes to schools which are having 64 (59.26%) teachers and staff. Again the picture resembles a village wise variation. While other departmental staff are placed for the entire Panchayat, school teachers are school based which reflects that Rangrai Chapori has only 4 teachers which is the lowest while Tatikata Pathar has 43 teachers serving under different schools based at the village. Apart from the above, there are 15 ASHA and 5 ANMs in the Panchayat functioning under the health department. Again, here also 9 ASHAs are based in the Tatikata Pathar village while only 1 ASHA is based at Rangrai Chapori. The institutions of government include Panchayat Office, schools, ICDS centers and HSCs which also reflect variation and gaps in the context of village wise existence

6.4 Assessment of community capacities required to address the disaster in all four phases

So far as the community capacities are concerned, the overall assessment based on tools used portrays limited capacity of the villages to deal with disasters. For preparedness, nothing much is done in advance, except household level seasonal preparedness for fuel-wood, food, etc. The basic actions to be taken such as embankment strengthening are also not taken in appropriate time according to the villagers and are done usually at the last moment. Again, there is the vivid picture for different villages, while Rangrai Chapori has no way out but to face floods, the arrangements, such as banana boats, temporary raised platforms at household level are constructed in the beginning of the rainy season as preparedness while village like Tatikata Pathar which usually suffers flood due to embankment breach, there is no such usual practice and are based on necessity. The constructions of houses for those who are capable are with raised plinths, while some kuccha houses are also constructed with additional earth filling moving house plinth to a bit higher ground. In response, though community unity and joint struggle for protecting embankments, evacuating vulnerable families become visible, but these are not organized and planned. There is a lack of sufficient skilled manpower, equipment and resources for effective response. Tatikata Pathar and Bhelouguri villages have access to a few of the safe schools for shelter while for Leruamukh, the dyke (embankment) is the main shelter along with two raised platforms (one of which is in verge of erosion), villagers from Rangrai Chapori also takes shelter upon the dyke but very few. No safe shelter exists for Rangrai Chapori and Leruamukh villages. Relief supports are provided, but are often late and insufficient. For Rehabilitation, still many villagers were observed temporarily settled upon the dykes as there is no sufficient system and structure in place for rehabilitating those losing their shelter and livelihood due to disasters. The Same is true in case of reconstruction as well. Thus, on the whole, the community capacity can be ranked as moderate in context to disasters while the vulnerability is high.

6.5 Status of trained community volunteers in the village:

ASHA and ANMs are having basic skills in first aid and are of some help to the community during disasters and 5 Registered Medical Practitioners also practice in the Panchayat who provide basic medical services in need on a paid basis. There are no other trained volunteers in the GP. The people of the community help each other during the time of crisis with feelings and obligation. But, there is definitely a lack of skilled manpower to aid evacuation, rescue, first aid, response management, etc. The potential for the same also exist as there are community based groups who can be supplemented with such skills.

6.6 Police outpost and Fire stations:

There is one police station and one police outpost in the GP. The police outpost in Bhelouguri is between zero to four kms distance from all four villages having Bhelouguri at the nearest (0 KM) and Rangrai Chapori (4 KM) at the last end. The Police station is 0 to 7 kms from Tatikata Pathar (0 Km) to Rangrao Chapori (7KMs). The nearest fire station is at 1

KM from Tatikata Pathar while it is inaccessible for Rangrai Chapori in the absence of roads. During rainy season, Leruamukh which also at 5 KMs also become inaccessible due to poor road connectivity for accessing fire services.

7. Preparedness:

7.1 Availability of Panchayat Disaster Management Plan

There is no Panchayat level plan for disaster management in existence so far. It would be wrong to assume a plan from the Panchayat level since the concept is yet to be explained and understood. The KIIs with Panchayat officials and FGDs with elected PRI representatives make it clear that still disaster management is looked at as the responsibility of state and district. There is no awareness on required actions and resources for planning and implementing DM activities at Panchayat level. At school level also, there is no plan for school disaster management in the visited schools. Even the schools identified as shelters do not have any plan in place.

7.2. Resource Inventory and Availability of Equipment's at Panchayat level

The Panchayat has not prepared any resource inventory, so far, however, there are equipments available to aid emergency response. There are two JCBs (1 each at Tatikata Pathar and Bhelouguri villages), 5 big dumpers and 4 mini dumpers, 12 tractors and 4 trucks in the Panchayat. These all equipments are mainly earth crashing and moving equipments.

7.3 Availability and status of disaster shelter:

There are five schools in the Panchayat identified as shelters rather used as shelters in previous floods, of which four are located in the Tatikata Pathar village and one at Bhelouguri village, while there are no such schools and shelters at Leruamukh and Rangrai Chapori. The schools can hold approximately 1550 population. All these schools have accessible roads, electricity, store and kitchen. Though drinking water facilities are there in the form of hand pump, but the existing ones are often submerged in case of heavy floods and temporary hand pumps are installed on the requirement by PHED. Three of the schools have one toilet each while two of them have two toilets. The toilets are not well maintained and are found to be locked at the time of visit in two schools, namely Maerabari Rastra Bhasha LP & ME and Maerabari Balak Vidyalaya. Besides, there are no specific plans, stocks or specific preparedness at school level for emergency shelter needs. (Photos attached as Annexure) There are two raised platforms in existence at Leruamukh one of which is in verge of erosion. People in these villages take shelter upon the dyke during floods.

7.4 Measure taken to disaster risk reduction:

Disaster Risk Reduction can be seen informally at household level as households do make necessary arrangements of fuel, food for rainy season. One of the critical measures that can be seen in agriculture is that villagers have intensified Ravi cropping to deal with flood losses which can also be considered as an adaptation to recurrent floods. Construction of raised platforms at Leruamukh is a major risk reduction initiative by the Panchayat, where MGNREGS fund is used for creating community shelter place. There are also two motor boats provided by the Panchayat under BRGF which are of extensive benefit for villagers of

Rangrai Chapori who are not having any road connectivity. Besides, during floods average household is skilled in making banana boats which are extensively used for transportation and mobility during floods. Children from childhood in Rangrai Chapori are brought up learning swimming as an essential survival skill. Though it is also with other three villages, but the scale is limited. It has been observed that villagers still feel that creating bolder spur and strong embankments can resolve the problem of flood and to that affect the existing embankments and dykes and their maintenance are not done in a timely manner and with adequate quality. Early warning system which is seen as a very important component is not well established. Flood warnings are disseminated using PA systems installed with mosques and Police station only in case of embankment breach. Villagers traditionally monitor the water level and rainfall pattern to make out the possibilities of floods. Information flow through mobile phone and discussion in the daily markets are the major warning dissemination mechanisms. TV is also referred by those accessing it, however, it is emphasized here again that PA systems were used only when embankment breach took place during the current year flood.

7.5 Community Involvement in various stages and phases:

Community in an informal manner assists fellow members for emergency evacuation in case of floods, police also come into action as the situation demands along with the community. During this year's flood, community were extensively involved to protect a newly constructed health sub-center when it was on the verge of erosion however, failing on which it was demolished. Relief committee is formed by the Circle Office having the Gaon Burah (Village Elder) as the leader to manage relief distribution during and post flood.

7.6 Use of local knowledge, skill in disaster management:

The above paragraphs do give an impression of the overall picture for local knowledge and skills used for disaster management. However, the most important ones are indicated below:

- **Bhel:** It is a temporary boat made of banana trees and bamboo. This is seen only during floods and used extensively for community transportation.
- **Chang:** A platform made of bamboo either for storing harvested crop or for staying back at home when houses are inundated. Mainly those who are unwilling to leave their houses use this technique for survival.
- **Temporary houses:** Faced with frequent floods, many villagers at Rangrai Chapori only constructed kucha and temporary houses which are low cost can be re-constructed without much pain and money through locally available straw and soil. Thereby de-limiting the volume of financial loss due to the loss of a well constructed house.
- **Household preparedness:** People in the villages can calculate the risk of flood and thus keep stocks, especially fuel wood (paddy and jute straw, dried cow-dung etc.) to meet the needs during flood season.
- **Agriculture;** Villagers do intensify agricultural activities during non-flood situation to make over the losses incurred during floods. Three times cultivation is practiced in

the Panchayat and more emphasis is given on Ravi crops, especially vegetables which are grown using modern methods.

In spite of the above coping strategies, loss and damage are rampant due to floods and depends on persons individual capacity for speedy recovery. However, for the loss of housing in case the land survives, it takes around a 15-30 day time to rebuild a temporary shelter for villages like Rangrai Chapori while in case of Leruamukh where people after losing their land are temporarily settled upon the dykes with temporary shelters, their complete recovery is far from prediction of time limit. There is a saying in the Panchayat that for 8 months we work to deal with the losses that we suffer during the months of flood. People also use migration as a tool to recover. Many families have permanently left Leruamukh and Rangrai Chapori villages and migrated to other places due to erosion..

8. Conclusive Analysis:

In the light of the above facts and figures and based on overall analysis the following arguments on the existing level of community resilience can be made:

- **Physical and Infrastructural resilience:** There are no proper drinking water supply and testing procedure. The entire dependency is upon tube wells (Hand pumps) which are to be observed to be with high arsenic and iron content. Use of filters both traditional and modern, are limited. Transportation while moderate in two villages, average in one and no road connection in one village creates low levels of resilience, sanitation is still very poor and the existing practices of temporary toilets are neither safe nor hygienic considering the flood exposure. Communication through the use of mobile phones can be one of the better factors as accessibility is high. While three villages have power connectivity one is still roaring under darkness. Communities still depend on a large scale upon natural fuel (wood, straw) for cooking. There is a dearth of adequate number of emergency shelters and the existing ones too are not having adequate facilities. Housing is still not resilient to floods. All these factors indicate that physical and infrastructural resilience is low in this Panchayat.
- **Institutional Resilience:** No system of community based disaster risk management exists in the villages. Though evacuations often practiced, but there is no specific plans or pre-fixed place. It has so far remained time based. The Community has its system of understanding and communicating early warnings but it is not organized neither it is community driven. Apart from the health sub-centers, there are no emergency support institutions or skilled set of manpower exist, leaving the entire emergency response to individual and community volunteerism. It is essential that an organized system of community led disaster risk reduction be created with specific roles and responsibility for effective results which is presently non-existent. Thus, the resilience on the above grounds is very low.
- **Social Resilience:** It is good that some degree of DRR is visible in government flagship programs like MGNREGS through which raised platforms are created of late. However, community satisfaction is low because of less number of projects implemented. While Tatitakata pathar is rich in accessing more number of social protection schemes and measures, Rangrai Chapori is isolated in this picture because of its location. It is also reflected that children, women, elderly and marginalized are receiving some degree of support services through different government schemes

mainly in the areas of health, education, livelihood, social security, etc. The Panchayat can be placed with level average so far as social resilience is concerned.

- **Economic resilience:** Around 30% of the households are BPL while 53% are just above the poverty line in this Panchayat. The alternative livelihood options are not satisfactory. Villagers often resort to migration to deal with losses incurred with disasters. Wage labor in nearby places is another alternative. So far no skill development or alternative livelihood generation activities are implemented at a major scale, though as mentioned earlier, more emphasis is on Ravi crops to recover the losses from flood in terms of agriculture. For meeting emergency financial needs, still the major chunk of the population depends on informal sources like village money lenders. Credit supports from formal sources are accessed by a limited number of people. SHGs are presently among those who are accessing credit from formal sources. However, around 88% of SHGs are formed in only one village (Tatikata Pathar). This reflects an imbalanced picture as there is no such group at Rangrai Chapori. This economic resilience is also low.
- **Ecology and Environmental Resilience:** being in zone v and near to Brahmaputra river, the Panchayat is vulnerable to multiple hazards. There is gradual land erosion by the river which is diluting ecology of the Panchayat. Post flood pollution and resulted epidemics are also a major threat. Ground water is rich in iron and arsenic. Though fuel for cooking is available in form jute and paddy straw, these are pollution causing agents and difficult to access during flood season. Overall the ecological resilience can be placed at average.

9. Recommendation and Action Plan:

Based on the above analysis the following actions are recommended:

- **Increasing institutional resilience:** To consider very low as resilient as the first priority there is a need to strengthen institutional resilience through institutionalizing and formalizing DRR in the villages. It will include linking existing community based groups with DRR activities, building capacity of existing manpower through skill development and planning. Some sort of an institution with sustainable basis by linking with the ongoing social development and protection measures will be essential to increase community institutional resilience. Since, the non CBDRM program has so far been implemented, this will be a good opportunity to nurture a culture of preparedness in the Panchayat.
- **Creation of model shelters:** The project might initiate actions to evolve a model shelter at Leruamukh or Rangrai Chapori village which are mostly in need of it. The shelter should have all facilities required emergency flood shelter while also ensuring usability of the building for normal times with maintenance responsibility. The model of a Multipurpose flood shelter can be an instrumental demonstration in this Panchayat.
- **Creation of a pool of specialized teams:** A pool of skilled manpower from all four villages skilled in planning, rescue, first aid etc. is needed for the Panchayat. This pool may be created, new or can be linked to existing community based groups. While formation it must be kept in mind that all stages of group formation or

development are considered and both economic, social and DRR goals are integrated. Linking with economic opportunities can be beneficial in this regard.

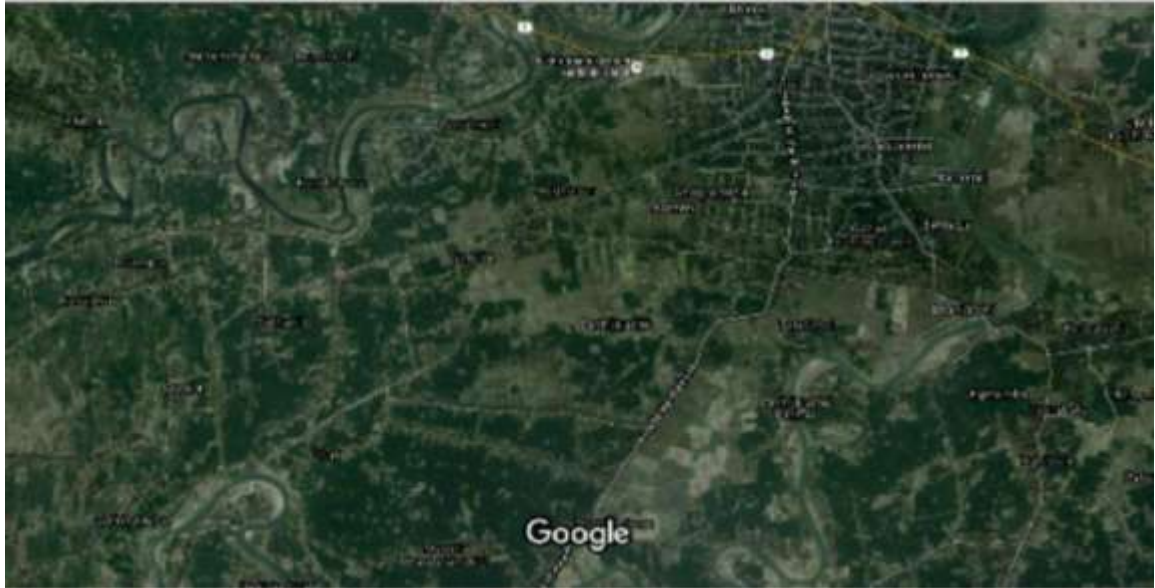
- **Iron and Arsenic treatment:** As there are no PWS or any water treatment plant, demonstrating low cost filters preferably that can be locally made and used will be essential for the villages. Testing facility can also be introduced.
- **Storage:** It has been explained by the community that cold storage is very much essential to increase the food security as well as economic benefits for farmers in order to better face the disasters. It may be considered, how vegetables can be stored at Panchayat level or limited capacity infrastructure may be created to enhance economic benefits from the existing productions.
- **Warning Dissemination hub:** It can be taken as a model Panchayat based warning can be generated and disseminated. It may include technological interventions for warning generation and dissemination mechanism. The existing institutions like mosque, Panchayat, schools, etc. can be used as a base for such intervention.

Entry points:

- **Induction:** At the very outset there is a need to organize a three day training for PRIs and Officials at Panchayat level on Project induction and CBDRR including planning for resilience at Panchayat level. This should include importance, relevance, needs and available resources, etc. for Resilience building at Panchayat level. This should be taken as an induction of the project, where objectives, process and steps, activities and outputs are shared and unified agenda for action is developed with Panchayat level officials. This should be taken as an opportunity to define a project action plan at Panchayat level.
- **Ward Sabhas:** After the Panchayat level training, there is a need to conduct induction Ward Sabhas to familiarize the community, especially the respondents about the follow up action being planned based on the BLS conducted. This will enable institution to build up and creation of CBDRR structure at ward level.
- **Identification of appropriate technology partner:** It is also essential to identify potential technology partners who can deliver installation warning dissemination hub, water treatment facility, cold storage facility, etc. this can be one or multiple partners with technical expertise and may be selected from or outside the district.
- **Ward level Resilience Plans:** After The ward sabhas, ward level resilience plans must be chalked out to demonstrate the activities of resilience build for and with the community as per needs. Though major activities will be same as above ward specific actions can be developed based ward sabhas and follow up meetings.

1. Introduction

1.1 General introduction:



Location Map of Villages in Bhatkuchi Panchayat (Source: Google Map)

Bhatkuchi Gram Panchayat comes under Mandia development block in Barpeta District, Assam state of India. It is located in the south side of the Barpeta district. Bhatkuchi Panchayat is 4 km (approx) far from the development block and 7 km (approx) far from the district. There are six revenue villages at Bhatkuchi Panchayat namely Bhatkuchi, Barpalli, Kopoha, Patlikuchi Pathar, Tetlirtal, Karertal. It has a vivid configuration in terms of population where Muslims and Hindus are living together. Muslims are the majority in this Panchayat. It is centrally located between the block and district headquarter.

1.2 Geography:

Bhatkuchi Panchayat is situated in a low lying area, the road connecting the Block headquarter with that of the district passes through the Panchayat which higher than the villages located on both sides of the road. River Bhelengi passes through two revenue villages namely Bhatkuchi and Kopoha which causes flooding at Tetlirtal, Kopoha, Bhatkuch, Patlikuchi Pathar. The soil is alluvial and considered very productive for agriculture. The silt disposition with flood water increases the productivity of soil as per the villagers. Bricks industries have emerged as identity for the Panchayat which have caused significant geographical changes in land pattern. As most of the earth is extracted for bricks making at Bhatkuchi village by these brick industries, water logged places can be seen all around because of the pithalls created.

1.3 Climate and Seasons:

Bhatkuchi Panchayat enjoys three distinct seasons such as hot weather season, Monsoon weather season and cold weather season. The summer season from March to May is followed by the monsoon from June to September and late monsoon which extends upto October. The winter season begins in late November and continues till February is characterized by average temperatures remaining generally above 12 to 8 degree Celsius. The average annual rainfall ranges from 360 to 400 cm.

2. Demographic Profile:

2.1 Population:

As per survey conducted by the Health sub centers and ANMs located within the Panchayat the 4% (733) of the total population were between 0-24 Months, 4% (672) in the age group 25-60 months, 16% (2604) in the age group 5-13 years, 10% (1692) were in the age group 14-18 Years, 22% (3741) in the age group 19-35 Years, 23% (3912) between 36-60 Years are and 21% (3420) above 61 years are

As per data available from the Gram Panchayat office the total number of households at Bhatkuchi Panchayat is 3766 whereas the total number of APL household in the GP is 2353 and total number of BPL households are 793. Out of total APL household 11% are SC and 89% are generally. Out of total BPL household, 4% are SC, 91% are General and 4% are women headed families.

2.2 Education:

As per 2011 census the total percentage of literates at Bhatkuchi Panchayat is 50%. Karertal village had the highest percentage of literates at 62%, whereas Tetlirtal village had the lowest literate percentage at 44%, followed by 46% at Bhatkuchi village, 58% at Barpalli village, 50% at Kopoha and 57% at Patlikuchi Pathar. The break up of literates as per education level was not available. Recurrent floods have posed significant threat to the educational scenario of the village.

3. Infrastructure

3.1 Household Amenities

As per data collected available with GP office, 97% of the houses in the Panchayat are Kutcha, 3% of the houses are Pucca. 759 houses are constructed in the Panchayat under IAY which are evolved with locally suitable design combining aluminium sheets for walls and RCC pillars. However, with limited grants, beneficiaries usually contribute to make houses with large space. Every year, most of the kutcha houses in the Panchayat being washed away or get submerged due to flood water and the villagers have to take shelter on the embankment or main road. Few people in the Panchayat have constructed houses with raised plinth but still not able to cope with heavy floods.

3.2 Government Properties/Buildings:

There are 21 numbers of aganwari centers at the Panchayat, 13 numbers of primary schools, 5 numbers of ME schools, 3 numbers of High schools, 2 numbers of colleges, Gram Panchayat office, 2 numbers of Health Sub-centers and 2 numbers of community hall. Total road length of Bhatkuchi village was estimated at 10 kms, road length of Barpalli at 8 km, Kopoha at 6kms, road length of Patlikuchi pathar at 4 kms whereas Tetlital and Karertal at 7kms, the majority of the road in the village are kaccha. Road of the Bhatkuchi village (Agri embankments are used as roads) was partially washed away by flood. During monsoon season community people, mostly depend on boats. Two boats are available in Kopoha whereas 4 boats are available in Bhatkuchi village.

3.3 Transportation:

The mode of transportation at Bhatkuchi Panchayat is both road and waterways. Only Bhatkuchi village have whole day boat service. Bhatkuchi Panchayat has a whole day transportation facility as the Barpeta-Mondia road passes through the Panchayat. There are approximately a total of 28 tractors, 23 trucks and 410 motorbikes approx while boats are available whole day at Bhatkuchi. One tanga each is available with Bhatkuchi, Patlikuchi Pathar and Tetlirtal village.

3.4 Sanitation facilities:

Out of total household in the Panchayat, 4.86% households have individual toilets in their houses. The majority of household 95.14% of the household preferred open defecation or kutcha toilets which are susceptible to flooding. As per data available with the Public Health Engineering Department 64 toilets are under construction. Sanitation is one amongst the major problems faced by the Panchayat. Kucha toilets are neither scientific nor durable in the context of floods which ultimate results in cost of repeated construction and open defecation during the lean period.

3.5 Domestic Water facilities:

Majority people of Bhatkuchi Panchayat are solely dependent on tube wells (also known hand pumps) and the rest of the community people use river water for domestic purpose. According to the PHED two pipe water supply is under construction at Bhatkuchi and Patlikuchi Pathar village. There are 102 functional and 29 defunct tube wells, which are sunk by PHED in the Panchayat but most of the tube wells get submerged under water during flood time. Iron rich water was visible in all villages which is also recognized by the villager though no test had been done so far. Water purification practices are very limited in the Panchayat. Many still drinking water directly from the tube well while very few households use traditional or modern water purification systems.

3.6 Food facilities

There are 13 numbers of PDS shops at Bhatkuchi Panchayat. Bhatkuchi village has the highest number of PDS shops at 4 nos while Barpalli and Karertal villages have the lowest numbers at 1 each. There are (Approx) a total of 247 numbers of grocery/vegetable shops at Bhatkuchi Panchayat of which 120 shops are located at the Bhatkuchi village while only 3 Grocery/vegetable shops are located at Patlikuchi Pathar which is lowest in number. There are total 24 meat shops are available at the entire Panchayat, of which highest numbers of meat shops at 8 are available at Kopoha while the lowest number at 1 is located at Patlikuchi Pathar. There are 8 numbers of markets at Bhatkuchi Panchayat of which 3 markets are located at Bhatkuchi village. Due to recurrence of floods people have shifted to Eri cultivation and Eri is major crop cultivated during non flood season which meet their need for survival and also serves commercial purpose.

3.7 Power /Energy:

Out of 3766 households, only 43% (1636) household at Bhatkuchi Panchayat have access to electricity while the rest of the household at the Panchayat depend on kerosene lamp and very few households have solar light. The power supply is very limited at the Panchayat as per the community people. The power supply is available at daytime, but limited at night, which badly impacts the study of children. As per by Gas Agency, Barpeta around 35% households at Panchayat have a gas connection while remaining depends upon Chula/ fire wood. Karertal has the highest number of gas connections for cooking at 340 while Barpalli having the lowest number of gas connection at 130.

3.8 Health Facilities /Health Access:

There are two sub centers under which there are 5 ANMs and 18 ASHAs are providing health services to the entire Bhatkuchi Panchayat. 54.33% immunization rate has been achieved in the year 2015 till October. The highest rate of achievement is found at Patlikuchi Pathar at 79%, while the lowest rate of achievement is found at Bhatkuchi at 39%. From Bhatkuchi and Barpalli the district hospital is around 5 Kms while the PHC and Taluk hospital are around 4 KMs. Whereas Kopoha is 8 km far from district hospital and 2 km far from PHC and Taluk hospital. Patlikuchi pathar is 7 km far from the district hospital while Tetlital and Karertal is 4 km far from district hospital. Due to worst condition of road at Bhatkuchi village ambulance unable to enter into their village during emergency situations. Somehow the community people manage to take the patient in hand made banana stem boat to the main road in order to access ambulance as the ambulance unable to enter into the village due to lack of proper village road. Community people are facing the worst situation every year due to flooding.

3.9 Communication:

As per the data available with Panchayat office, through FGDs at village level and transect walks, out of total households, 87.5% households have a mobile phone

connection, 22.5% use the internet via mobile, very few 1.83% use radio and 20% have access to televisions. The very limited household has radio as the use of radio is decreasing day by day. Community people use mobile phone to inform their relatives before the flood. Generally the community people observed the increasing level of the river water after continuous shower. Sometimes villagers also get a warning of flood through local news channels and accordingly the community people share the news with one another within the Panchayat. The mosques PA system is being used as early warning of flood by the religious group so that community people get time to be prepared before flood situation.

3.10 Religious Places / Buildings:

There are a few religious places such as mosques in the Panchayat. Most of the Mosque in the Panchyat is equipped with PA system (loudspeakers). This PA system has been used for early warning dissemination during flood at Tetlirtal and Bhatkuchi villages. Though this emphasized only during emergencies such as embankment breach. The infrastructure of these mosques is both kutcha and pucca.

4. Economy and Livelihood:

4.1 Land Use:

As per the data available with the Agriculture Department (Village level Extension Worker and Office of the Circle Officer), 16% households are landless, 44.83% are marginal, 29.33% are small and 3.5% are big land owners at Bhatkuchi Panchayat. The highest percentage of landless at 25% is staying in Bhatkuchi village, whereas the lowest percentage at 10% households in Tetlitol village is landless. The highest percentage of marginalized landholders at 54% is staying in the Barpalli village while for the same, the lowest percentage at 36% of Bhatkuchi village. Big landholders are highest in case of Bhatkuchi (5%) and lowest in case of Tetlirtal at 2%.

4.2 Crops and Irrigation facilities:

The cropping pattern at Bhatkuchi Panchayat is divided into three major crops such as Rabi, summer paddy and jute. The Rabi crops are cultivated in 693 Ha of land, of which highest is in Bhatkuchi village at 230 Ha of land, while the lowest at in Karertal at 50 Ha and the season for the cultivation of Rabi crops is from September to October. The entire agricultural land is cultivated either through canals, tube well or shallow tube well at the Bhatkuchi Panchayat. Summer paddy is cultivated in 1330 Ha of land, of which highest cultivated land is at Bhatkuchi at 410 Ha whereas the lowest cultivated land is at Karertal at 110 Ha. The season for cultivation is from November to December. Jute is cultivated in three villages of Panchayat viz. Bhatkuchi, Barpalli and Tetlirtal. The total land cultivated under jute is 170 Ha of land, of which the highest area is cultivated at Tetlirtal at 80 Ha and the lowest is at Barpalli at 40 ha. The season for cultivation is from March to April.

4.3 Natural Resources:

The River Bhelengi is the water body flowing through Bhatkuchi and Kopoha village at the Bhatkuchi Panchayat. The river water is used for irrigation through canals created by Agriculture department. The land is considered one of the most fertile in the district and the average productivity is good. Land is also suitable for bricks making as a result a number of brick industries have grown up in the Panchayat. The Panchayat doesn't have any special area sites like sanctuaries or forest reserves. Almost every household can access to water, but water quality differs from place to place within the Panchayat.

4.4 Livelihood matrix:

As per the Primary Census Abstract of 2011 published by the Census of India, There were 5721 workers, of which 4419 (77%) were main workers and 1302 (23%) were marginal workers. Of the total main workers 1449 (33%) were farmers, 491 (11%) were agricultural laborers, 437 (10%) were household industry workers and 2042 (46%) were other workers. Among the marginal workers, 93 (7%) were farmers, 606 (47%) were agricultural laborers, 97 (7%) were household industry workers and 506 (39%) were other workers. During FGDs at village level, it has come out from the discussion that the majority of the community people depend on agriculture and fishing at Bhatkuchi Panchayat. Continuous flood badly affects their standing crops and same in case of fishing.

4.5 Financial Status:

There is no bank in the Panchayat. However, there are two CSPs (Customer Service Points) one each of a nationalized bank (SBI) and of a Regional Rural Bank (AGBB). There are 75 numbers of the SHGs functional at the Panchayat. The highest number of SHGs is in a Karantal village at 17 while the lowest number is at Kopoha at 8 SHGs. Credit sources in the Panchayat 30 Bandhan (MFI) groups are also operational who access easy credits. Besides, money lender is also amongst the major sources of credit for meeting emergency needs.

4.6 Government Schemes:

Several schemes of government have benefited the community people of Bhatkuchi Panchayat. 3104 numbers of people at Panchayat have access to job card and there are getting job under MGNREGS, 775 women are engaged in Self help groups which is under the National Rural Health Mission. 3146 households are getting basic food items such as rice, sugar and wheat from 13 numbers of PDS located in several villages under Bhatkuchi Panchayat. 604 have received health services under NHM, 448 adolescent girls and lactating mothers got nutritional support from NHM and 159 elderly people are getting old age pensions. 759 houses have been constructed under IAY within the Panchayat. Though there is an issue of irregularities of work under MGNREGS. The old age pension is very limited which is not enough for survival. Sanitation facilities at the Panchayat need to be enhanced through governmental schemes.

5. Hazard and Vulnerability Assessment (HVA)

5.1 Disaster profiling:

Flood and water logging were major hazards for the Panchayat affecting every alternative year. Being a low lying zone flood water remains for a considerably longer period affecting agriculture and routine life in the Panchayat. Erosion is seen at Bhatkuchi and Kopoha villages. The geography of Bhatkuchi village has been changed due to constant erosion by the Bhelengi river as the river divided the village into two parts and is gradually moving in eroding. Storms (Heavy winds) also affect the the kucha houses significantly. Fire is another hazard, especially in the inaccessible areas in all the villages. Continuous emission of huge quantity of toxic elements from brick inns is creating health hazards within the Panchayat such as throat and eye problem and also polluted the drinking water.

5.2 Seasons of disasters

Flood generally occurs from May to September, storm occurred from February to May, fire occurred from February to April, erosion occurs from May to September, accidents are seen throughout the year at the Panchayat. Harmful gases come out of brick inns which create health problems from January to April and again from November to December.

5.3 Hazard assessment:

Flood is the frequent visiting hazard for Bhatkuchi Panchayat. Every year flood damages infrastructure, houses and standing crops which create imbalances in the lives and livelihood of communities people for the time being. Apart from flood erosion is another hazard for the Panchayat, the Bhelengi River, which is flowing at Bhatkuchi and Kopoha village is eroding the village gradually. Seasonal storm, fire and pollution from brick inns can be placed at next priority.

5.4 Vulnerable populations and infrastructure:

3420 persons are above the age of 60 while there are 1405 children are under 0-5 year age group which together make 29% of the total population who are more vulnerable to disasters. Elderly people and children who are residing in thatch houses are highly vulnerable to fire and storm and along with those who are residing near the river side. It has been observed that the riverside habitations at Bhatkuchio villages are on the verge of erosion. It includes both public and private property. As Agri embankments are the principal source of road transportation for certain areas of the Panchayat, breaching in those embankments which are happening time and again cause severe problems for trasporation can be considered as critical vulnerable infrastructure.

5.5 Exposure to vulnerability

Bhatkuchi and Kopoha village are highly vulnerable to flood as these two villages are near the Bhelengi River. Many schools at low lying locations in Tetlirtol, Kopoha,

Bhatkuchi villages suffer inundation and had to remain close in rainy season. The embankment at Bhatkuchi village which also serve the purpose of the road connecting the other village of the Panchayat is also highly vulnerable to flooding. During flood children those who are studying in nearby villages are crossing the river frequently; they are vulnerable to boat capsized during flood. During flood pregnant women are more vulnerable as the transportation system became defunct, and in absence of transportation system locally made Banana tree stem boat are used to transport the patient to hospital. The agricultural lands on which the majority of people depend is highly vulnerable to water logging in post flood season. The majority of agricultural land is located in low lying areas. According to the villagers they wanted to do multi cropping, but as the farmland filled with water most of the time the farmers unable to crop other accept Eri cropping. Health centers are located in low lying areas which get submerged during flood.

6. Human Resources:

6.1 Status of civil society:

There is no such NGO based at Bhatkuchi Panchayat though there are 16 numbers of youth groups at the Panchayat. During emergency or crisis situation youth groups render voluntary support in their villages in order to help the community people. There is one club at Bhatkuchi village named as Skylark Club where people take shelter during flood.

6.2 Status of Community Based Groups:

Bhatkuchi Panchat is having good numbers of community based groups. There are total 75 numbers of women SHGs, of which the highest number of SHGs is at Karertal(17) and the lowest number of SHGs are at Kopoha (8), while there is only 1 farmer union which is located at Tetlirtal village and there are 16 youth groups at the Panchayat. The highest numbers of the youth groups are at Bhatkuchi village (8) and lowest number of youth group is at Barpalli (1).

6.3 Government Institutions and staff:

There are total 204 government staffs from several departments such as P & RD, Education, Revenue, School and college. Out of the total staffs t the Panchayat 142 (70%) is males and 62 (30%) are females. The highest numbers of staffs belong to the school, which is 112 (55%). The highest population of teachers is at Bhatkuchi at 45 whereas the lowest numbers of teachers are at Barpalli at only 2. There is only one college in Bhatkuchi village and a total of 85 staffs are engaged in the college. Apart from this there are 5 ANMs and 18 ASHAs functioning at the Bhatkuchi Panchayat under Health Department. Out of % AMNs, 2 ANMs are based in Bhatkuchi village, 1 at Patlikucghi Pathar, 1 at Kopoha and ANM of Tetlirtal village is looking after two other villages named as Karertal and Barpalli.

6.4 Assessment of community capacities required to address the disaster in all four phases

Preparedness: Community people prepare banana tree stem before flood in order to transport from one village to another or the women folk use the same as the base for cooking during flood. Few community people those who are financially sound construct raised plinth houses so that they could prevent the flood entering into their houses, but such cases are very low in number.

Response: Emergency response is mainly voluntary in the Panchayat. The community struggles to protect embankments during river flowing over the danger marks are seen in the Panchayat. Community help each other within the village to evacuate the vulnerable population to safe places, though the way they used to evacuate is unplanned and unorganized the community lacks skilled manpower, resources and equipments for effective response. Only three villages at the Panchayat VIZ Bhatkuchi, Kopoha Karertal have access to schools, college, GP office and club for safe shelter. Relief is provided by the government is also not enough to meet the community needs. There are reports discriminatory practices in relief distribution.

Rehabilitation and Reconstruction: Rehabilitation and reconstruction are very limited in the Panchayat. Though no records are available, but few households are settled in the Panchayat temporarily upon government lands who had lost their shelter due to erosion by Bramhaputra from neighboring Panchayats.

6.5 Status of trained community volunteers in the village:

There is no trained community volunteer at the Bhatkuchi Panchayat. But the ASHA and ANMs are having basic skills in first aid and provide basic services to the community people during emergency situations.

6.6 Police outpost and Fire stations:

There are no police station and police outpost in the GP. The nearest police station from is 6 km far from the Bhatkuchi Panchayat. During the heavy rain Bhatkuchi Panchayat becomes inaccessible due to poor condition of roads. The nearest fire service office is also 6 km far from the GP.

7. Preparedness:

7.1 Availability of Panchayat Disaster Management Plan

There is no Disaster management plan available at Bhatkuchi Panchayat. Till date, no awareness programme has been organized on Dos and donts or other information related to Disaster management. Though few schools have participated in mock drills facilitated by DDMA, there are no plans available with any of these schools on disaster management. Even the schools, colleges and Panchayat which are used as shelters, doesn't have any plan in place.

7.2. Resource Inventory and Availability of Equipment's at Panchayat level

No resource inventory has been prepared by the Panchayat yet. No such equipments exist at the Panchayat for meeting the need during emergency. However, there are 28 tractors, 23 trucks, 410 motorbikes and 3 Carts/Tongas are available at Bhatkuchi Panchayat which can be used during any kind of emergency situation at the Panchayat. Apart from these no other equipments are available at the Panchayat so far.

7.3 Availability and status of disaster shelter:

There are three schools, one college, one club and GP office has been identified as disaster shelter and these infrastructures has been used as a relief shelter of which 1 Hs School, GP office and Club are located at Bhatkuchi village, 1 school at Kopoha and school and 1 college at Karertal. There is no such shelters or club at Barpalli, Patlikuchi Pathar and Tetlirtal village. All the identified school has the capacity to hold 1160 population approx. The college has the capacity to hold 700 populations while the GP office and the club has the capacity to hold 200 populations. All the identified shelter has accessible roads, electricity, store and kitchen. Though drinking water facility is not there at GP office and the club. There are two toilets at Bhatkuchi shelter, 1 at GP office, 2 at college, one at Karertal shelter but no toilet at the club.

7.4 Measure taken to address disaster risk reduction:

Construction of Agri bhandhs (agricultural embankments) is also serving as the road connectivity within the village. The grant under the IAY scheme are not sufficient for a spacious houses considering the size of the family. It has been found that the majority of beneficiaries includes their own additional money, construct spacious, but semi pucca houses with aluminum sheet and RCC pillars. Some of such houses are constructed with raised plinth through earth filling. The pith created through the digging of earth is used as fish tanks. Erie (paddy) cultivation was adopted by the people of this Panchayat from Bangladesh, the season and methodology of this prevents large scale losses due to flood and enabled the community to deal with the flood losses. Besides, during floods every household is skilled in making banana tree stem boats which are used for transportation from one place to another during floods. Flood warnings are disseminated by using PA systems installed in mosques in extreme emergency cases. Community people can assess the possibilities of flood by keeping an eye on the rise in water level and rainfall pattern.

7.5 Community Involvement in various stages and phases:

Community people help each other during any kind of emergency at Panchayat. Relief committee is formed by the Circle Office where Gaon Burah look after the process and manage manage relief distribution during and after a flood.

7.6 Use of local knowledge, skill in disaster management:

Some of the local knowledge / skill the community used for management of disasters and risk reduction:

1. **Agriculture:** Due to pro-longed period of water logging and floods over the past years, the villagers in this Panchayat shifted their cultivation season and pattern. Now Irri (paddy) is grown in place of bow (paddy) which is done in November to March thus avoiding the possibility of flood damage. Moreover, shallow tube wells have replaced rain fed agriculture, thereby supporting agriculture in non-rainy season.
2. **Housing:** Many houses were seen constructed at raised platforms where the Household dug soil and raised the level of their houses while the hole/pith created by digging of soil is used for fishing.
3. **Boats:** Banana made boats are the prime means of transportation during flood and water logging season.

Conclusive Analysis:

The key findings based on the Panchayat baseline data and community resilience indicators are summarized below:

- **Physical and Infrastructural resilience:** It has been found through the study that the Panchayat lacks a proper water supply facility. Though projects were taken up, but never completed. Sanitation infrastructure is also very poor. Agri-embankments and E&Ds are used as roads but are not resilient and breaching results in flood and post flood transportation problem. Many schools and all health shelters are also not safe and suffer inundation. Embankments and roads are used as flood shelters. There is a lack of enough safe shelter and adequate scientific construction practices. The overall infrastructural resilience can be categorized as low.
- **Institutional Resilience:** No system of community based disaster risk management exists in the villages. Neither any sort of plan or institutional structure with manpower. The best part is few schools have practiced mock drill, but these were external efforts and need a community based initiative. Being a low lying land, environmental vulnerability has been already very high. Considering the exposure to hazards and overall vulnerability, which is high in this case, there is a need to have trained and skilled volunteers to deal with emergency relate services. Overall the institutional resilience can also be ranked as low for this Panchayat.
- **Social Resilience:** Still no concrete DRR structure/infrastructure has been in place. Many government schemes are implemented accessed but level of satisfaction is very less. IAY houses are modified to meet their specific housing needs which can be seen as a best practice. Support services to women, children, elderly and marginalized exist. There is scope of better utilizing social cohesion and existing government schemes to improve resilience. These all arguments places the overall resilience of the Panchayat at average.
- **Economic resilience:** The availability of alternative livelihood options through brick industries and is cropping in agriculture has improved the overall financial capacity. The BPL composition of the total population is 20%, which better off than many other Panchayats. However, villages like Bhatkuchi (Ward No, 2, 3, 4), Tetlirtol, Kopoha and Patlikuchi Pathar, the water logging and frequent flood exposures pushes the earned capacity backward. The financial facilities for credit in form of MFIs and SHGs are also gaining good ground. Thus, overall economic resilience can be placed at average.
- **Ecology and Environmental Resilience:** Bricks Industries are causing severe environmental pollution affecting air, water and land in this Panchayat. The unavailability of treated water supply and proper sanitation increases the

environmental vulnerability. Though progress has been achieved in terms of use of cooking gas, still a huge segment depends on polluting sources. The greenery in the Panchayat is also limited because of floods and water logging and lack of environmental regeneration measures. Thus the environmental resilience can be categorized as low for this Panchayat.

Recommendation and Action Plan:

Based on the above analysis the following actions are recommended:

- **Institutional strengthening:** Considering the above facts, it is essential that organized efforts are put in place to for creating disaster risk management institutions for the Panchayat. The youth clubs and SHGs can be linked with the CBDRR to undertake risk reduction and emergency response actions with appropriate training and skill development. Panchayat and its institutions should be supported to develop a composite as well as individual plans for risk reduction and emergency response.
- **Creating Raised Platforms and Grains Banks:** In villages like Bhatkuchi and Kopoha, there is a need to create raised platforms for shelter. All the villages have reflected upon demand safe storage facility for grains during floods. Grain banks can be demonstrated at some of the villages integrated with raised platforms.
- **Strengthening existing shelters:** There is a need to strengthen existing shelters with facilities and equipments to be safer places for shelter. For those resorting to embankments and roads, existing facilities can be modified and strengthened, particularly schools to meet emergency shelter needs during flood season.
- **Erosion Protection:** The river sides along Bhtakuchi and Kopoha villages need erosion protection. There is a need to demonstrate suitable measures and identify resources and measures for sustainability. The Panchayat schemes were considered insufficient for implementing such measures by a majority of PRI representatives. However, there is a need to provide integrated solutions through integrating multiple schemes.
- **Water Treatment and Supply:** The under construction PWSS structures lying without progress for many years need to be completed. There is a need to demonstrate low cost water testing and filter kits (Household) for facilitating access to safe drinking water.
- **School Based actions:** There is a need to train and equip schools to act as catalyst and facilitators for CBDRR activities. The existing Juniro and Senior College can be nurtured so as to be leaders in this regard.
- **Strengthening Skylark Club:** The skylark club which is already having some sort of infrastructure can be strengthened through resources and skill training to be a center of excellence in CBDRR activities at the Panchayat level.
- **Linking religious institutions with CBDRR:** Mosques in the Panchayat can be nodal warning dissemination places. There is a need to select one of them, which will have direct communication with district/state level water monitoring stations. The mosques must be sensitized to announce on a regular basis about the situation of flood and water in the district and the main rivers of importance to the Panchayat.

Entry points:

- **District and Block level project launch:** It should involve key district and block level officials to communicate the project goals and activities and to identify key support groups for the project cause. This sensitization will be a critical step forward in demonstrating key resilience building actions.

- **Panchayat level sensitization:** At the outset, the project aims and objectives must be shared with the people of the community. The PRIs, religious and community leaders will be crucial in this regard along with the CBO members.
- **Induction Training:** An induction training for selected PRIs, CBO members, ASHA, ICDS workers and school teachers on the project process, deliverables, results and expectations can be conducted at an external place. This training should include basics of CBDRR, village and GP level planning, role of stakeholders, relevant government schemes and resources. It would be extreme help to involve few selected blocks and district level official Rural Development, Agriculture and health departments in this training. The DDMA must be the proper channel for such a training.
- **Recruitment of Panchayat CBDRR work force:** The Panchayat must have a core group of actors who will lead the model demonstration process. They must be recruited from the community, should have voluntary spirit and desire to contribute to the development of the Panchayat. Their training and motivation will be crucial.
- **Identification of village specific actions:** In order to reduce time and build on effective actions, there is a need to sit with people at village level to chalk out need specific actions while also conveying the project intentions, limitations, expectations from the community and available resources within the Panchayat. This should result in a community resilience plan and specific actions to be taken within the time frame
- **Demonstrations:** There is a need to identify potential activities that can be taken up in water logged areas in the context of the Panchayat and how best the resources can be channelized to meet the basic needs of the villages. There is a need to demonstrate effective road through strong embankments at Bhatkuchi village.

Most actions will depend upon the resources available for the needs in this Panchayat for building resilience are diverse.

References:

1. Village and Town wise Primary Census Abstract, District Census Handbook of Dhemaji (2011), Published by Directorate of Census Operations, Assam, available at http://www.censusindia.gov.in/2011census/dchb/1809_PART_B_DCHB_DHEMAJI.pdf
2. Situation Report on floods in Dhemaji, Assam Inter-agency Group, available at http://iagassam.org/public_html/userfiles/File/dhemaji_29june.pdf
3. Making Inclusive District Disaster Management Plan of Dhemaji District of Assam (August, 2014), Prepared by District Disaster Management Authority, facilitated by All India Disaster Mitigation Institute, Dhemaji available at <http://dhemaji.nic.in/Draft%20District%20Disaster%20Management%20Plan%20of%20Dhemaji.pdf>
4. Ground Water Quality in Shallow Aquifers of India, Central Ground Water Board, September, 2007 available at http://cgwb.gov.in/documents/waterquality/gw_quality_in_shallow_aquifers.pdf
5. Buragohain Mridul and Sarma Hari Prasad, A GIS Based Assessment of Lead, Arsenic, Cadmium and Aluminium Contamination of Ground Water in Dhemaji District of Assam, India, Research Paper, October 2013, Published at International Journal of Research in Chemistry and Environment Vol. 3 Issue 4 October 2013(1-7) ISSN 2248-9649 available online at <http://www.ijrce.org/issue/october%202013/1-7.pdf>
6. Village and Town wise Primary Census Abstract, District Census Handbook of Morigaon (2011), Published by Directorate of Census Operations, Assam, available at http://www.censusindia.gov.in/2011census/dchb/1805_PART_B_DCHB_MORIGAON.pdf
7. Flood Contingency Plan (2012) of Morigaon district, Prepared by District Disaster Management Authority of Morigaon available online at [http://morigaon.nic.in/administration/departments/images/Contingency%20Plan\(Flood\)2012%20Morigaon.pdf](http://morigaon.nic.in/administration/departments/images/Contingency%20Plan(Flood)2012%20Morigaon.pdf)
8. Child Protection District Needs Assessment Study and District Child Protection Plan of Morigaon district, conducted by Leher in collaboration with State Child Protection Society (Assam) and UNICEF (Assam) available online at [http://leher.org/pdf/district-need-assessment-\(dna\)-study.pdf](http://leher.org/pdf/district-need-assessment-(dna)-study.pdf)
9. Baseline Survey of Minority Concentrated Districts, District Report, Baprpeta conducted by Omeo Kumar Das Institute of Social Change and Development: Guwahati, Study Commissioned by Ministry of Minority Affairs Government of India available at <http://www.icsr.org/marigaon.pdf>
10. Village and Town wise Primary Census Abstract, District Census Handbook of Barpeta (2011), Published by Directorate of Census Operations, Assam, available at http://www.censusindia.gov.in/2011census/dchb/1804_PART_B_DCHB_BARPETA.pdf
11. Bhatkuchi Panchayat location and Map accessed via <https://www.google.co.in/maps/place/Bhatkuchi,+Assam/@26.3004889,90.9994204,14z/data=!3m1!4b1!4m2!3m1!1s0x37599b9f1ef72655:0xeb0707c49dd9f917>
12. Information on district profile and block profile available at <http://barpeta.nic.in/index.html>
13. Baseline Survey of Minority Concentrated Districts, District Report, Baprpeta conducted by Omeo Kumar Das Institute of Social Change and Development:

Guwahati, Study Commissioned by Ministry of Minority Affairs Government of India available at <http://www.icssr.org/Barpeta.pdf>

14. Detailed Project Report of Integrated Watershed Management Program on Behelngi river basin available at <http://snaiwmpassam.gov.in/xfiles/Barpeta-VIII-2011-12-Bhelengi%20Iwmp.pdf>

Annexure

Annexure 1: Data Tables in support of the arguments in Chapter I

Table No: 1.1 - Population caste details

#	Name of Village/habitat	No. of HH	No. of APL Households						No. of BPL Households					
			ST	SC	OBC	GEN	Women Head	Differently Abled	ST	SC	OBC	GEN	Women Head	Differently Abled
1	Balijan	33	0	0	16	0	0	0	0	0	5	0	0	0
2	Garubandha Block	49	30	0	0	0	0	0	16	0	0	0	0	0
3	Garubandha Pathar	49	24	0	0	0	0	0	15	0	0	0	0	0
4	Kapahtali	47	0	0	20	0	0	0	0	0	21	0	0	0
5	Ratua	49	0	0	21	0	0	0	0	0	6	0	0	0
6	Naepali Khuti NC	19	0	0	0	0	0	0	14	0	0	0	0	0
7	Chechela	22	0	0	0	0	0	0	0	0	9	0	0	0
8	Jangaghali Block	17	0	0	0	0	0	0	0	0	8	0	0	0
9	No. 1 kechukhana	43	0	0	18	0	0	0	0	0	15	0	0	0
10	Kechulkhana NC	91	0	0	45	0	0	0	0	0	39	0	0	0
11	Naruathan	201	0	0	108	0	0	0	0	0	21	36	0	0
12	Chakala Doloni	28	0	0	10	0	0	0	0	0	18	0	0	0

13	Powa Saikia	88	0	0	39	0	0	0	0	0	15	0	0	0
14	Naruathan NC	41	9	0	0	0	0	0	24	0	0	0	0	0
15	Laumuri	19	9	0	0	0	0	0	10	0	0	0	0	0
16	No.2 kechukhana	60	25	0	0	0	0	0	30	0	0	0	0	0
17	Kalakata	134	0	0	47	0	0	0	0	0	16	0	0	0
18	No.2 Powa Saikia	237	0	0	164	0	0	0	0	0	67	0	0	0
19	Baithak	24	0	0	23	0	0	0	0	0	0	0	0	0
20	No.2 Chakala Doloni	47	0	0	10	0	0	0	0	0	0	0	0	0
	Total GP	1298	97	0	521	0	0	0	109	0	240	36	0	0

Source: Data collected from GP office.

Table No: 1.2 - Housing

#	Name of Village/habitat	Residential					
		Hutment/ kacha	Pucca	RCC	Double storey	Multi storey	Any other(IAY)
1	Balijan	17	2	0	0	0	14
2	Garubandha Block	36	0	1	0	0	12
3	Garubandha Pathar	22	0	0	0	0	27
4	Kapahtali	31	4	0	0	0	12
5	Ratua	36	0	0	0	0	13
6	Naepali Khuti NC	9	0	0	0	0	10
7	Chechela	22	0	0	0	0	0
8	Jangaghali Block	17	0	0	0	0	0
9	No. 1 kechukhana	22	5	0	0	0	16
10	Kechulkhana NC	76	9	0	0	0	6

11	Naruathan	115	24	2	0	0	60
12	Chakala Doloni	2	4	0	0	0	22
13	Powa Saikia	37	10	0	0	0	41
14	Naruathan NC	35	4	0	0	0	2
15	Laumuri	10	3	0	0	0	41
16	No.2 kechukhana	21	9	0	0	0	30
17	Kalakata	95	14	0	0	0	25
18	No.2 Powa Saikia	118	3	0	0	0	89
19	Baithak	16	5	0	0	0	3
20	No.2 Chakala Doloni	31	10	0	0	0	0
GP Total		768	106	3	0	0	423

Source: Data provided by GP President of Naruathan GP Mr. Sasanka Gogoi

Table No: 1.3 -Transportation Access available in the village

#	Name of Village/habitat	NH passes	SH Passes	Village Road length (Approx)	Railway Station	Port/boat base	Remarks
1	Balijan	NIL	NIL	4KM (Kacha)	NIL	NIL	
2	Garubandha Block			1.5 KM(PWD concrete)			
3	Garubandha Pathar			2KM(Kacha)			
4	Kapahtali			4KM(Kacha)			
5	Ratua			3KM(Kacha)			
6	Naepali Khuti NC			.5KM(Kacha)			
7	Chechela			5KM(Kacha)			
8	Jangaghali Block			4KM (E&D)			
9	No. 1 kechukhana			1KM(Kacha)			
10	Kechulkhana NC			.5KM(Kacha)			
11	Naruathan			1.5KM(PWD)			
12	Chakala Doloni			1KM(PWD)			
13	Powa Saikia			3KM(Kacha)			
14	Naruathan NC			.5KM(PWD)			
15	Laumuri			1.5KM(PWD)			
16	No.2 kechukhana			1KM(PWD)			

17	Kalakata		2KM(Kacha)	
18	No.2 Powa Saikia		.5KM(Kacha)	
19	Baithak		1KM(Kacha)	
20	No.2 Chakala Doloni		1.5KM(Kacha)	

Source: Data derived from Gram Panchayat Office and Panchayat level meeting

Table No: 1.4 - Transportation Services available in the village

#	Name of Village/habitat	Auto/Tempo	Tractor	Mini Trucks	Two wheelers (Bike/Cycle)	Route Bus Govt/Pvt	Ferry/Boats Services	Carts/Tonga	Other (specify)
1	Balijan	2 times	0	0	4	N	Nil		
2	Garubandha Block	Whole day	1	0	5	Y			
3	Garubandha Pathar	N	0	0	4	N			
4	Kapahtali	N	1	0	6	N			
5	Ratua	N	0	0	4	N			
6	Naepali Khuti NC	N	0	0	3	N			
7	Chechela	N	0	0	2	N			
8	Jangaghali Block	N	0	0	1	N			
9	No. 1 kechukhana	N	5	4	60	N			
10	Kechulkhana NC	N	0	0	10	Y			
11	Naruathan	Whole day	3	2	60	Y			
12	Chakala Doloni	Whole day	1	0	10	Y			
13	Powa Saikia	N	1	0	40	N			

14	Naruathan NC	Whole day	0	0	5	N			
15	Laumuri	Whole day	0	0	8	N			
16	No.2 kechukhana	N	0	0	12	N			
17	Kalakata	N	0	0	20	N			
18	No.2 Powa Saikia	N	0	0	60	N			
19	Baithak	N	0	0	5	N			
20	No.2 Chakala Doloni	N	0	0	3	N			
	Total				322				

Source: The data was provided by GP Office while two wheelers are estimated in terms of numbers during the GP level meeting as no such official data exists with GP.

Table No: 1.5–Sanitation facilities

#	Name of Village/habitat	No: of HH	Individual/family toilets	Community toilets	Open defecation (% approx)	Individual toilets under construction	Community toilets under construction	Drainage system – available / not available	Drainage system if available open /closed
1	Balijan	31	23	Not Available	1	4	Not Available		
2	Garubandha Block	51	40		2	7			
3	Garubandha Pathar	61	38		2	12			
4	Kapahtali	66	50		1	8			
5	Ratua	42	40		2	2			
6	Naepali Khuti NC	26	20		1	4			
7	Chechela	29	15		2	0			
8.	Jangaghali Block	15	10		1	0			
9.	No. 1 kechukhana	50	40		2	6			
10.	Kechulkhana NC	114	73		2	20			
11.	Naruathan	91	70		1	11			

12.	Chakala Doloni	23	12		2	6	
13.	Powa Saikia	66	30		1	18	
14.	Naruathan NC	58	40		1	12	
15.	Laumuri	70	40		5	25	
16.	No. 2 kechukhana	73	49		0	15	
17.	Kalakata	86	43		2	18	
18.	No.2 Powa Saikia	290	190		1	40	
19.	Baithak	33	6		3	12	
20.	No.2 Chakala Doloni	55	30		1	10	

Source: This data is as per PHED department updated till 2013.

Table No: 1.6 - Domestic Water facilities

#	Name of Village/habitat	No. of HH	Piped Water Supply	Public Tap	Tube Well		Open well	Pond	River	Remarks
					Functional	Defunct				
1	Balijan	31	0	0	1	0	0	NIL	NIL	
2	Garubandha Block	51	0	0	3	0	0			
3	Garubandha Pathar	61	0	0	0	0	1			
4	Kapahtali	66	0	0	2	0	0			
5	Ratua	42	0	0	2	0	0			
6	Naepali Khuti NC	26	0	0	0	0	0			
7	Chechela	29	0	0	0	0	0			
8	Jangaghali Block	15	0	0	1	0	0			
9	No. 1 kechukhana	50	0	0	1	0	0			
10	Kechulkhana NC	114	0	0	0	0	0			
11	Naruathan	91	1	5	4	2	0		Y	
12	Chakala Doloni	23	0	0	2	0	1		NIL	
13	Powa Saikia	66	0	0	1	1	1		Y	
14	Naruathan NC	58	0	0	2	1	0		NIL	
15	Laumuri	70	1	10	1	2	0		Y	
16	No. 2 kechukhana	73	0	0	2	0	0		NIL	
17	Kalakata	86	0	0	2	0	0		Y	
18	No.2 Powa Saikia	290	0	0	6	0	2		NIL	
19	Baithak	33	0	0	2	0	0			
20	No.2 Chakala Doloni	55	0	0	1	0	0			

	GP Total	1330	2	15	33	6	5			
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Source: Data collected from PHED department

Table No:1. 7 - Health Facilities

#	Name of Village/habitat	PHC	Sub-Center/Dispensaries	Doctors	Nurses	ANMs	ASHA staff	No. of beds	Diagnostic Centers	% of Immunisation	Cold Chain available	Pvt Clinics	AYUSH
1	Balijan	Not Available	Nil	Not Available		0	1	Nil	Nil		Not Available	Nil	Not Available
2	Garubandha Block		Nil	0	Nil	Nil	Nil		Nil				
3	Garubandha Pathar		Nil	0	Nil	Nil	Nil		Nil				
4	Kapahtali		Nil	0	1	Nil	Nil		Nil				
5	Ratua		Nil	0	1	Nil	Nil		Nil				
6	Naepali Khuti NC		Nil	0	1	Nil	Nil		Nil				
7	Cechela		Nil	0	Nil	Nil	Nil		Nil				
8	Jangaghali Block		Nil	0	Nil	Nil	Nil		Nil				
9	No. 1 kechukhana		1	2	1	Nil	Nil		Nil				
10	Kechulkhana NC		Nil	0	1	Nil	Nil		Nil				
11	Naruathan		Nil	0	1	Nil	Nil		Nil				
12	Chakala Doloni		Nil	0	0	Nil	Nil		Nil				
13	Powa Saikia		1	2	1	Nil	Nil		Nil				
14	Naruathan NC		Nil	0	1	Nil	Nil		Nil				
15	Laumuri		Nil	0	0	Nil	Nil		Nil				
16	No. 2 kechukhana		Nil	0	1	Nil	Nil		Nil				
17	Kalakata		Nil		1	Nil	Nil		Nil				
18	No.2 Powa Saikia		Nil		1	Nil	Nil		Nil				
19	Baithak		Nil		0	Nil	Nil		Nil				
20	No.2 Chakala		Nil		Nil	Nil	Nil		Nil				

	Doloni											
	Total		2		3	12				GP level average is 40% (BPM-NHM)		

Source: Data collected from Naruathan and Kechkhana Health Sub-Centres and Block Program Management Unit, (Block Data Manager) Dhemaji

Table No: 1.8 – Health Access – distance from village

#	Name of Village/habitat	PHC	BPHC	District Hospitals	Multispecialty hospitals	Nursing homes	Availability of Ambulance
1	Balijan	2 1/2km	7km	16km	NIL	15km	17km
2	Garubandha Block	4km	11km	14km		13km	15km
3	Garubandha Pathar	4km	11km	14km		13km	15km
4	Kapahtali	5km	12km	16km		14km	16km
5	Ratua	5km	5km	22km		20km	22km
6	Naepali Khuti NC	5km	5km	22km		20km	22km
7	Chechela	5km	5km	22km		20km	22km
8	Jangaghali Block	6km	6km	23km		22km	23km
9	No. 1 kechukhana	12km	12km	21km		19km	21km
10	Kechukhana NC	13km	13km	22km		20km	22km
11	Naruathan	7km	14km	17km		15km	17km
12	Chakala Doloni	6km	15km	18km		16km	18km
13	Powa Saikia	8km	8km	18km		16km	18km
14	Naruathan NC	9km	9km	19km		17km	19km
15	Laumuri	9.5km	9.5km	19.5km		17.5km	19.5km
16	No. 2 kechukhana	14km	14km	23km		21km	23km
17	Kalakata	12km	12km	19km		17km	19km
18	No.2 Powa	8km	8km	18km		16km	18km

	Saikia						
19	Baithak	9km	9 km	19 km		17 km	19km
20	No.2 Chakala Doloni	7 km	7 km	18 km		16 km	18km

Source: The data collected from Panchayat office

Table: 1.9- Communication

#	Name of Village /habitat	No: of HH	Land line connections	Mobile Connectivity	Internet connectivity	Radio/ Transistors	TV	HAM Radio available	EWS -Modern	EWS-Traditional
1	Balijan	33	NIL	95%	10%	20%	40%	Nil	Mobile	Rainfall pattern at upper catchment
2	Garubandha Block	49	NIL	90%	5%	20%	40%	Nil	Mobile	Rainfall pattern at upper catchment
3	Garubandha Pathar	49	NIL	85%	3%	30%	45%	Nil	Mobile	Rainfall pattern at upper catchment
4	Kapahtali	47	NIL	95%	20%	10%	50%	Nil	Mobile	Rainfall pattern at upper catchment
5	Ratua	49	NIL	85%	Nil	25%	30%	Nil	Mobile	Rainfall pattern at upper catchment
6	Naepali Khuti NC	19	NIL	85%	5%	30%	40%	Nil	Mobile	Rainfall pattern at upper catchment
7	Chechela	22	NIL	85%	Nil	40%	5%	Nil	Mobile	Rainfall pattern at upper catchment
8	Jangaghali Block	17	NIL	85%	Nil	30%	25%	Nil	Mobile	Rainfall pattern at upper catchment
9	No. 1 kechukhana	43	NIL	90%	23%	25%	45%	Ni	Mobile	Rainfall pattern at upper catchment
10	Kechulkhana NC	91	NIL	85%	5%	30%	40%	Nil	Mobile	Rainfall pattern at upper catchment

11	Naruathan	201	NIL	95%	30%	20%	45%	Nil	Mobile	Rainfall pattern at upper catchment
12	Chakala Doloni	28	NIL	85%	5%	30%	40%	Nil	Mobile	Rainfall pattern at upper catchment
13	Powa Saikia	88	NIL	90%	10%	30%	45%	Nil	Mobile	Rainfall pattern at upper catchment
14	Naruathan NC	41	NIL	85%	15%	35%	45%	Nil	Mobile	Rainfall pattern at upper catchment
15	Laumuri	19	NIL	90%	5%	30%	30%	Nil	Mobile	Rainfall pattern at upper catchment
16	No. 2 kechukhana	60	NIL	95%	Nil	35%	45%	Nil	Mobile	Rainfall pattern at upper catchment
17	Kalakata	134	NIL	95%	20%	25%	40%	Nil	Mobile	Rainfall pattern at upper catchment
18	No.2 Powa Saikia	237	NIL	95%	5%	25%	35%	Nil	Mobile	Rainfall pattern at upper catchment
19	Baithak	24	NIL	85%	15%	30%	40%	Nil	Mobile	Rainfall pattern at upper catchment
20	No.2 Chakala Doloni	47	NIL	90%	Nil	35%	35%	Nil	Mobile	Rainfall pattern at upper catchment
	Total			89%	12%	28%	38%			

Source: Data collected from GP office

Table No: 1.10- Land

#	Name of Village/habitat	No. of HH	Small(%)	Medium(Marginal)(%)	Big(%)	Landless(%)	Government land(Hac)	Forest cover	Any other(Hac)
1	Balijan	33	9	34	43	14	0	0	0
2	Garubandha Block	49	27	31	24	18	27	0	Siltation area
3	Garubandha Pathar	49	25	30	38	7	29	0	0
4	Kapahtali	47	14	55	25	6	56	0	0
5	Ratua	49	0	30	70	0	45	0	0
6	Naepali Khuti NC	19	0	23	77	0	15	0	0
7	Chechela	22	0	27	77	0	20	0	0
8	Jangaghali Block	17	0	13	87	0	30	0	0
9	No. 1 kechukhana	43	25	43	24	8	49	0	0
10	Kechulkhana NC	91	22	35	40	3	53	0	0
11	Naruathan	201	48	32	17	3	12	0	0
12	Chakala Doloni and No. 2 Chakladoloni	28+47	27	37	26	10	0	0	0
13	Powa Saikia	88	47	30	18	5	15		25
14	Naruathan NC	41	17	54	17	12	35	0	0
15	Laumuri	19	16	34	43	7	63	0	0
16	No. 2 kechukhana	60	21	46	33	0	57	0	59
17	Kalakata	134	31	33	29	7	17	0	0
18	No.2 Powa Saikia	237	40	43	12	5	20	0	0
19	Baithak	24	0	80	20	0	12	0	0

Source: Data has been provided by District Agriculture Office.

Table No: 1.11 - Crops and Irrigation facilities (No. of HH).

#	Name of Village/habitat	Crops cultivated	Area Cultivated (in Ha)	Irrigated (Canal, tube/ open well)	Dryland (Rain fed)	Period	Total Area under crop Insurance	Remarks
	Naruathan GP	Sali Paddy	359	Nil	359	Winter	Nil	
		Boa Paddy	497	Nil	497	Nov-Feb	Nil	
		Ahu Paddy	312	Nil	312	Summer	Nil	
		Boro Paddy	75	75	Nil	Oct-Feb	Nil	
		Potato	30	Tube	Nil	April-May	Nil	
		Vegetables (Rabi)	35	Tube	Nil	Rabi	Nil	
		Mustard	175	Tube	Nil	Rabi	Nil	
		Summer Vegetables	15	Tube	Nil	Summer	Nil	

Source: Agriculture Department / Gram Panchayat office)

Table No: 1. 12- Livelihood Matrix

#	Livelihood/Occupation	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Farmers	35	52	60	50	52	20	30	30	55	70	300	35	100	60	40	100	110	250	40	80
2	Agri Labourers	3	1	0	5	10	2	4	10	5	4	6	0	6	0	0	4	3	4	10	2
3	Traditional Occupation - barber, carpenter, mason, dhobi etc.	0	0	0	2	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0
4	Artisans/Handicrafts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Horticulture	3	1	0	3	4	0	1	4	0	0	2	0	2	0	0	0	2	1	3	0
6	Dairy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Sheep/goat rearing	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
8	Poultry	0	0	0	0	1	0	0	0	0	2	1	1	1	0	0	0	0	2	0	0

9	Fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Self-employed (petty shops/ mechanics)	0	0	0	2	0	0	0	0	3	5	10	2	4	0	0	4	0	3	0	0
11	Private jobs	5	10	10	5	4	3	0	5	4	5	12	8	20	3	9	6	7	25	4	3
12	Government. Jobs	2	2	0	5	0	0	0	0	5	3	27	1	20	1	1	3	8	19	4	0
13	Money lending	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
14	Migration (mention no: of HH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	48	66	70	72	71	25	35	49	72	89	364	48	158	64	50	117	130	304	61	85

Note: A= Balijan, B= Garubandha Block, C= Garubandha Pathar, D= Kapahtali, E= Ratua, F= Naepali Khuti NC, G= Chechela, H= Jangaghali Block, I= No. 1 kechukhana, J= Kechulkhana NC, K= Naruathan, L= Chakala Doloni, M= Powa Saikia, N= Naruathan NC, O= Laumuri, P= No.2 kechukhana, Q= Kalakata, R= No.2 Powa Saikia, S= Baithak, T= No.2 Chakala Doloni (Source: Data has been provided by the Gram Panchayat Office and is reflecting number of persons engaged in category wise livelihoods/occupations.)

Table 1. 13- Financial Institutions

#	Access to financial needs	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Nationalised Banks/CSP	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2	Regional Rural Banks/CSP	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
3	District Co-operative Banks, Cooperative Society	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4	Private Banks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Chit Funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Private money lenders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

7	Micro-finance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Thrift and Credit -SHGs	3	6	5	6	3	2	2	1	2	3	20	0	20	2	11	2	1	24	4	2
9	Any other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: A= Baliyan, B= Garubandha Block, C= Garubandha Pathar, D= Kapahtali, E= Ratua, F= Naepali Khuti NC, G= Chechela, H= Jangaghali Block, I= No. 1 kechukhana, J= Kechulkhana NC, K= Naruathan, L= Chakala Doloni, M= Powa Saikia, N= Naruathan NC, O= Laumuri, P= No.2 kechukhana, Q= Kalakata, R= No.2 Powa Saikia, S= Baithak, T= No.2 Chakala Doloni **(Source: Data provided by GP office)**

Table No: 1. 14- Community Based Groups

#	Name of Village/habitat	Community based groups/CSO			
		No: Women SHGs	No: of Farmers Union	No: Youth groups	No: Kishori Sanga
1	Baliyan	3	0	0	0
2	Garubandha Block	6	0	0	0
	Garubandha Pathar	5	0	0	0
3	Kapahtali	6	0	0	0
4	Ratua	3	0	0	0
5	Naepali Khuti NC	2	0	0	0
6	Chechela	2	0	0	0
7	Jangaghali Block	1	0	0	0
8	No. 1 kechukhana	2	0	0	0
9	Kechulkhana NC	3	0	0	0
10	Naruathan	20	0	0	0
11	Chakala Doloni	0	0	0	0
12	Powa Saikia	20	0	0	0
13	Naruathan NC	2	0	0	0
14	Laumuri	11	0	0	0
15	No. 2 kechukhana	2	0	0	0
16	Kalakata	1	0	0	0
17	No.2 Powa Saikia	24	0	0	0
18	Baithak	4	0	0	0
19	No.2 Chakala Doloni	2	0	0	0
	Total	119	0	0	0

Source: Mention number of Community based groups in the village/panchayat.

Table No: 1.15 - Government Staff

#	Name of the Revenue Villages	Gram Panchayat Staff (RD &PR)		Agri/Seri/ Floriculture		Education		Revenue		Animal Husbandry		School		Colleges		Fair price shop		Police		F & ES	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	1 NO KACHU KHANA	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
2	2 NO KECHUKHANA	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	0	0	0	0	0
3	2 NO NARUA THAN	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
4	BAITHAK	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
5	BALIJAN	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
6	CHAKALA DALANI	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
7	GORUBANDHA	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8	KALAKATA	0	0	0	0	0	0	0	0	0	0	9	5	0	0	0	0	0	0	0	0
9	KAPAH TALI	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0
10	LAWMURI	0	0	0	0	0	0	0	0	0	0	7	9	0	0	0	0	0	0	0	0
11	NARUA THAN	2	0	1	0	3	0	3	0	1	0	29	8	0	0	0	0	0	0	0	0
12	NEPALI KHUTI	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
13	POWA SAIKIA	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
14	POWASAIKIA PUB BLOCK	0	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	0	0	0
15	POWASAIKIA UTTAR BLOCK	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
16	RATUA	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	0	0	0
17	Naruathan NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	No.2 Chakala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Doloni																					
19	Garubandha Pathar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Kechulkhana NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total GP	2	0	1	0	3	0	3	0	1	0	86	39	0	0	0	0	0	0	0	0	0

Source: Data collected from GP

Table No: 1.16 – Resource Inventory –First responders

7.3	Resource Inventory					
	Name of Revenue Village	Divers	Trained First-Aid persons	Volunteers	Distance of nearest police station from the village	Distance of nearest F & ES station from the village
1	Balijan	NIL	0	NIL	16km	16km
2	Garubandha Block		0		14km	14km
3	Garubandha Pathar		0		14km	14km
4	Kapahtali		0		15km	15km
5	Ratua		0		21km	21km
6	Naepali Khuti NC		1		21km	21km
7	Chechela		0		21km	21km
8	Jangaghali Block		0		23km	23km
9	No. 1 kechukhana		0		20km	20km
10	Kechulkhana NC		0		21km	21km
11	Naruathan		2		16km	16km
12	Chakala Doloni		0		17km	17km
13	Powa Saikia		1		17km	17km
14	Naruathan NC		0		18km	18km
15	Laumuri		0		18km	18km
16	No. 2 kechukhana		0		22km	22km
17	Kalakata		0		18km	18km
18	No.2 Powa Saikia		0		17km	17km
19	Baithak		0		18 km	18 km
20	No.2 Chakala Doloni		0		17 km	17 km

Source: Data collected from Panchayat office.

Table No: 1.17- Availability of Equipment's

Village Name	Type of equipment	No:	Govt owned	Pvt owned	Distance from village	In usable condition	Remarks
Naruathan	Dumper	1	NA	Yes	NA	Yes	

Source: Data collected from GP.

Table No: 1.18 – Seasonality of Hazard in GP/Village

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flood												
Storm												
Fire												
Drought												
Thunder and lightning												

Source: GP and Ward leve

Annexure 2 : Data Tables in support of the arguments in Chapter II

Table No: 2.1 - Population caste details

#	Name of Village/habitat	No. of HH	No. of APL Households					No. of BPL Households						
			S T	S C	OB C	GEN	Women Head	Differently Able d	ST	SC	OB C	GEN	Women Head	Differently Able d
1	Leruamukh	430	0	0	0	178	0		0	0	0	186	5	
2	Bhelouguri	327	0	0	0	153	0		0	0	0	136	2	
3	Tatikata Pathar	1504	0	0	0	905	0		0	10	5	305	1	
4	Rangrai Chapori	181	0	0	0	82	0		0	0	0	91	7	
	Total	2442	0	0	0	1318	0		0	10	5	718	15	

Note: Total numbers of disabled are 95 but village wise data along with APL/BPL status is not available with the Panchayat. Source: Gaon Panchayat

Table No: 2.2 - Housing

#	Name of Village/habitat	Residential					
		Hutment/kacha	Pucca	RCC	Double storey	Multi storey	Any other(IAY)
1	Leruamukh	404	4	0	0	0	12
2	Bhelouguri	206	6	0	0	0	190
3	Tatikata Pathar	1203	135	15	0	0	125
4	Rangrai Chapori	181	0	0	0	0	3
	Total	1994	145	15	0	0	330

Source: Data collected from Gaon Panchayat

Table No: 2.3 - Government Properties/Buildings

#	Government properties	Leruamukh	Bhelouguri	Tatikata Pathar	Rangrai Chapori	Remarks
1	AWC	2	3	15	2	Infrastructure at Rangrai Chapori are kucha and temporary as it is an island (chor)
2	Primary school	1	2	8	1	
3	Higher primary	1	1	2	0	
4	High school	0	0	0	0	
5	HSC	0	0	0	0	
6	Colleges	0	0	0	0	
7	Gaon Panchayat office	0	0	1	0	
8	PHC / Dispensary building (Sub Centre buildings)	1	1	2	0	

9	Veterinary hospital	0	0	0	0	
10	Govt Quarters – Numbers	0	0	0	0	
	Total	5	7	28	3	

Source: Data collected from Gaon Panchayat

Table No: 2.4 –Transportation Access available in the village

#	Name of Village/habitat	NH passes	SH Passes	Village Road length	Railway Station	Port/boat base	Remarks
1	Leruamukh	0	0	2 KM	0	0	
2	Bhelouguri	0	0	3 KM (PWD)	0	0	
3	Tatikata Pathar	0	0	6.5 KM (both PWD and kucha)	0	0	
4	Rangrai Chapori	0	0	0	0	0	Island
	Total	0	0	11.5	0	0	

Source: Data collected from GP and from Ward members through a GP level FGD

Table No: 2.5 - Transportation Services available in the village

#	Name of Village/habitat	Taxi/Jeep	Tractor	Trucks	Two wheelers (Bike/Cycle)	Route Bus Govt/Private	Ferry/Boats Services	Carts/Tonga	Other (specify)
1	Leruamukh	8 Times	2	0	9	0	3 Times	0	0
2	Bhelouguri	8 Times	3	0	10	0	0	0	0
3	Tatikata Pathar	8 Times	7	4	50	0	0	0	0
4	Rangrai Chapori	0	0	0	2	0	3 Times	0	0
	Total	8 times	12	4	71	0	3 times	0	0

Source: Data collected from GP and from Ward member through a GP level FGD

Table No: 2.6 - Domestic Water facilities

#	Name of Village/habitat	No. of HH	Piped Water Supply	Public Tap	Tube Well		Open well	Pond	River
					Functional	Defunct			
1	Leruamukh	430	0	0	20	3	0	0	The Brahmaputra flows through the villages Rangrai chapori and Leruamukh
2	Bhelouguri	327	0	0	12	3	0	0	
3	Tatikata Pathar	1504	0	0	30	6	1	0	
4	Rangrai Chapori	181	0	0	4	2	0	0	
	Total	2442	0	0	66	14	1	0	

Source: data collected from Assistant Executive Engineer PHED Dhing Sub Division. The data on tube wells reflect those installed by PHED. HH level private tube wells (hand pumps) are available with majority of HH, though there is no studied data on the same

Table No: 2. 7- Power /Energy

#	Name of Village/habitat	No: of HH	Electricity connection available	No. of hours	Electricity not available	lanten	Gas connectivity	Kerosene stoves	Chula / Fire wood	Renewable energy
1	Leruamukh	430	310	6-7 hours	120	120	4	0	426	4
2	Bhelouguri	327	300	6-7 hours	27	27	20	0	307	5
3	Tatikata Pathar	1504	1400	6-7 hours	104	104	400	0	1104	3
4	Rangrai Chapori	181	0	6-7 hours	0	184	0	0	181	4
	Total	2442	2010	6-7 hours/day	251	251	424	0	2018	16

Source: Data collected through Panchyat level meeting, transect walk, FGDs and Gas distributor.

Table No: 2. 8 - Health Facilities

#	Name of Village/habitat	P H C	Sub-Center / Dispensaries	Doctors	Nurses	AN Ms	AS HA staff	No. of beds	Diagnostic Centers	% of Immunisation	Cold Chain available	Pvt Clinics	AYU SH
1	Leruamukh	0	1	0	0	1	3	0	0	94.87	0	0	0
2	Bhelouguri	0	1	0	0	1	2	0	0	100	0	0	0
3	Tatikata Pathar	0	1	0	0	2	9	0	0	86	0	0	0
4	Rangrai Chapori	0	0	0	0	1	1	0	0	72.7	0	0	0
	Total	0	3	0	0	5	15	0	0	88.3925	0	0	0

Source: The data collected from ANM of respective villages for the source year 2014-15. % of immunization is calculated through target Vs. Achievement for the source year 2014-15,

Table No: 2.9 - Health Access - distance from village

#	Name of Village/habitat	PHC	Taluk Hospitals	District Hospitals	Multispecialty hospitals	Nursing homes	Availability of Ambulance
1	Leruamukh	5 Km	14 Km	31 Km	0	32 Km	5 Km
2	Bhelouguri	3 Km	12 Km	29 Km	0	30 Km	3 Km
3	Tatikata Pathar	1 Km	10 Km	27 Km	0	28 Km	1Km
4	Rangrai Chapori	2 Km	16 Km	33 Km	0	34 Km	7 Km

Source: The data collected from GP.

Table:2.10- Communication

#	Name of Village /habitat	No: of HH	Land line connections	Mobile Connectivity	Internet connectivity	Radio/ Transistors	TV	HAM Radio available	EWS - Modern	EWS- Traditional
1	Leruamukh	430	0	62%	10%	2%	25%	0	Mobile and TV	From market places and river as well as rainfall observation
2	Bhelouguri	327	0	70%	20%	3%	30%	0		
3	Tatikata Pathar	1504	2	90%	30%	2%	60%	0		
4	Rangrai Chapori	181	0	20%	1%	2%	5%	0		
	Total	2442	2	61%	15%	2%	30%	0		

Source: Data collected from Gaon Panchayat through Panchayat level FGD as well as village level FGDs.

Table No: 2.11- Land

#	Name of Village/habitat	No. of HH	Landless (Data in %)	Small(Marginal) (Data in %)	Medium(Small) (Data in %)	Big (Data in %)	Government land in Ha	Forest cover	Any other
1	Leruamukh	430	32	42	16	10	0	0	0
2	Bhelouguri	327	35	39	16	9	1	0	0
3	Tatikata Pathar	1504	38	37	15	8	2	0	0
4	Rangrai Chapori	181	36	40	16	8	0	0	0

Source: Village Level Extension Worker, Agriculture Department, Tatikata. Note: Landless-Below 3.0 Bigha(below 1.0 acre), Marginal-3.0-7.5 Bigha(1.0 acre-1.0 Ha), Small-7.5-15.0 Bigha(1.0 Ha- 2.0 Ha), Bigha- 200 Ha above

Table No: 2.12 - Crops and Irrigation facilities (No. of HH).

#	Name of Village/habitat	Crops cultivated	Area Cultivated (in Ha)	Irrigated (Canal, tube/ open well) (in Ha)	Dryland (Rain fed) (in Ha)	Period	Total Area under crop Insurance	Remarks Total Geographical Area (in Ha)
1	Leruamukh	Sali paddy	110	50	60	July-Oct	Nil	231.0 Ha
		Winter paddy	85	65	20	June-Nov	Nil	
		Jute/veg	120	40	80	July-Oct	Nil	

2	Bhelouguri	Sali paddy	65	20	45	July-Oct	Nil	147.65
		Winter paddy	80	60	20	June-Nov	Nil	
		Jute/veg	105	45	60	Feb-May	Nil	
3	Tatikata Pathar	Sali paddy	250	80	170	July-Oct	Nil	661.0
		Winter paddy	90	70	10	June-Nov	Nil	
		Jute/veg	280	100	180	Feb-May	Nil	
4	Rangrai Chapori	Sali paddy	95	50	45	July-Oct	Nil	539.12
		Winter paddy	165	85	80	June-Nov	Nil	
		Jute/veg	180	100	80	Feb-May	Nil	

Note: Village Level Extension Worker, Agriculture Department, Tatikata.

Table No: 2.13 -Financial Institutions

#	Access to financial needs	Leruamukh	Bhelouguri	Tatikata Pathar	Rangrai Chapori	Remarks
1	Nationalised Banks	0	0	1	0	
2	Regional Rural Banks	0	0	0	0	
3	District Co-operative Banks	0	0	0	0	
4	Private Banks	0	0	0	0	
5	Chit Funds	0	0	0	0	
6	Private money lenders	0	0	0	0	
7	Micro-finance	0	0	0	0	
8	Thrift and Credit –SHGs	0	0	0	0	
9	Any other(CSP)	0	1	1	0	
	Total	0	1	2	0	

Source: Data Collected from Gaon Panchayat through Panchayat level and village level FGD. (There are total 80 SHGs but are thrift and credit societies rather formed under NRLM for livelihood activities)

Table No:2.14- Social Protection/Government Schemes

#	Villages	Leruamukh		Bhelouguri		Tatikata Pathar		Rangrai Chapori		Remark
		Available	Access how many	Available	Access how many	Available	Access how many	Available	Access how many	
1	MGNREGS ¹	Y	382	Y	294	Y	1492	Y	328	
2	National Livelihood ²	Y	55	Y	55	Y	770	N	0	
3	PDS ³	Y	364	Y	289	Y	1225	N	0	
4	NRHM ⁴	Y	140	Y	320	Y	983	Y	81	
5	IAY ⁵	Y	12	Y	190	Y	125	Y	3	
6	Skill India	N	0	N	0	N	0	N	0	
7	Nutrition support to Adolescent girls and lactating mother ⁶	Y	70	Y	67	Y	235	y	30	This is irregular and the list of accessing beneficiaries is based on last received
8	Elderly Pension ⁷	Y	90	Y	90	Y	210	Y	30	
9	Edu. Scholarship	N	0	N	0	Y	50	N	0	

Source: Data collected from ANM, AWWs, CRP (NRLM) and Gaon Panchayat

Table No: 2.15- Civil Society Groups

#	NGOs Name	Leruamukh			Bhelouguri			Tatikata Pathar			Rangrai Chapori		
		Issues	Staff		Issue	Staff		Issue	Staff		Issue	Staff	
			M	F		M	F		M	F		M	F
1	Social Economic Development Organisation	NIL	0	0	NIL			Sanitation (under SBM)	12	3	Nil	0	0

Source: Concerned NGO

¹ MGNREGS (Access how many) includes total number of Job card holders

² It includes total members in SHG who are benefitted from the scheme

³ Includes total beneficiary HH receiving benefits from PDS

⁴ Includes beneficiaries from different schemes under NRHM in total that are presently accessing

⁵ IAY includes total Beneficiaries si far

⁶ Nutrition support to adolescent girls as provided in the month of Septemeber is included after collecting from ICDS workers. Prganant women are not included as the numbers were not available with all ICDS workers at the time of survey

⁷ It includes total elderly receiving pension from government

Table No: 2.16- Community Based Groups

#	Name of Village/habitat	Community based groups/CSO			
		No: Women SHGs	No: of Farmers Union	No: Youth groups	No: Kishori Sanga
1	Leruamukh	5	0	0	0
2	Bhelouguri	5	0	1	0
3	Tatikata Pathar	70	4	2	0
4	Rangrai Chapori	0	0	0	0
	Total	80	4	3	0

Source: Data collected from panchayat.

Table No: 2. 17 - Government Staff

#	Name of the Revenue Villages	Gaon Panchayat Staff (RD &PR)		Agri/Seri/ Floriculture		Education		Revenue		Animal Husbandry		School		Colleges		Fair price shop		Police		F & ES	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	Leruamukh	5	0	1	0	1	0	2	0	1	0	9	3	0	0	0	0	30	4	0	0
2	Bhelouguri											5	0								
3	Tatikata Pathar											31	12								
4	Rangrai Chapori											4	0								
	Total	5	0	1	0	1	0	2	0	1	0	49	15	0	0	0	0	30	4	0	0

Source: Data collected from panchayat and relevant departments through their representatives.

Table No: 2.18 - Availability of plans

	Name of the village / habitat	Village DMP	School Disaster Management plan	Mock drills conducted in the village	Mock drills conducted in the schools/colleges	Mitigation plan available	Any other
1	Leuramukh	No	No	No	No	No	No
2	Bhelouguri	No	No	No	No	No	No
3	Tatikata Pathar	No	No	No	No	No	No
4	Rangrai Chapori	No	No	No	No	No	No

Source: GP Office and BEEO and CRC (SSA)

Table No: 2.19 – Resource Inventory –First responders

7.3	Resource Inventory					
	Name of Revenue Village	Divers	Trained First-Aid persons	Volunteers	Distance of nearest police station from the village	Distance of nearest F & ES station from the village
1	Leuramukh	0	1	0	5 Km	5 Km
2	Bhelouguri	0	1	0	2 km	3 Km

3	Tatikata Pathar	0	3	0	0	1 Km
4	Rangrai Chapori	0	0	0	7 Km	7 Km

Source: Data collected from GP. Trained in first aid reflect persons beyond ASHA or ANM mainly registered medical practitioners.

Table No: 2.20- Availability of Shelters - status

7.1 Identification of Cyclone/ Flood Shelter with Capacity										
Village Name	Identified Shelters	Sq.ft	Capacity to hold	Rooms	Toilets	Kitchen	Store	Electricity available	Water available	Easily accessible
Leruamukh	Nil									
Bhelouguri	Bhelouguri LP School	30	200	7	1	1	1	Y	Y	Y
Tatikata Pathar	Maerabari Rastra Bhasha LP & ME	40	500	6	2	2	1	Y	Y	Y
	Maerabari Balak Vidyalaya	60	600	6	2	1	1	Y	Y	Y
	Paschim Tatikata LP School	20	200	4	1	1	1	Y	Y	Y
	New LP School	15	50	2	1	1	1	Y	Y	Y
Rangrai Chapori	Nil									

Source: Data collected from GP through Panchayat level and village level FGD

Table No: 2. 21- Availability of Equipment's

Village Name	Type of equipment	No:	Govt owned	Pvt owned	Distance from village	In usable condition	Remarks
Leruamukh	Tractor	2		Y	Within the village	Y	
Bhelouguri	JCB	2		Y	Within the village	Y	
	Dumper	5		Y	Within the village	Y	
	Mini Dumper	1		Y	Within the village	Y	
Tatikata Pathar	JCB	1		Y	Within the village	Y	
	Truck	4		Y	Within the village	Y	
	Mini dumper	3		Y	Within the village	Y	
Rangrai Chapori	Nil						

Source: Data collected from GP through Panchayat level and village level FGD

Table No: 2. 22 - Seasonality of Hazard in GP/Village

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hazard												
Flood												
Storm												
Fire												
Erosion (Leruamukh and Rengrai Chapori)												
Epidemics												

Note: GP and Village level FGDs

Annexure 3: Data Tables in support of the arguments in Chapter III

Table No: 3.1 - Population caste details

#	Name of Village/habitat	No. of HH	No. of APL Households						No. of BPL Households					
			S T	SC	OB C	GE N	Wom en Head	Differe ntly Abled	S T	S C	OB C	GE N	Wom en Head	Differe ntly Abled
1	Bhatkuchi	1235	0	72	0	611			0	17	0	300	5	
2	Barpalli	272	0	0	0	161			0	0	0	81	5	
3	Kopoha	607	0	93	0	308			0	10	0	100	7	
4	Patlikuchi Pathar	449	0	0	0	282			0	0	0	104	7	
5	Tetlir tol	620	0	0	0	413			0	0	0	89	5	
6	Karertal	583	0	94	0	319			0	8	0	50	5	
	Total	3766	0	259	0	2094			0	35	0	724	34	

Source: GP Secretary of Mr. Nurul Islam

Table No: 3.2 -population age wise

#	Name of Village/habitat	0-24 M	25 M- 60 M	5 -13 yrs.	14 – 18 yrs.	19-35	36-60	61 Plus
1	Bhatkuchi	253	296	1285	601	1533	1368	291
2	Barpalli	49	67	89	180	350	410	800
3	Kapoha	161	97	604	261	889	717	105
4	Patlikuchi Pathar	140	60	360	220	599	465	107
5	Tetlir tol	79	77	140	260	160	570	1305
6	Karertal	51	75	126	170	210	382	812
	Total	733	672	2604	1692	3741	3912	3420

Data source: Health Sub centres and ANMs in-charge of respective villages as per the Household (HH) survey conducted by HSC in 2014-15.

Table No: 3.3 - Housing

#	Name of Village/habitat	Residential					
		Hutment/kacha	Pucca	RCC	Double storey	Multi storey	Any other (IAY in Nos)
1	Bhatkuchi	98%	2%	0	0	0	317
2	Barpalli	98%	2%	0	0	0	81
3	Kapoha	97%	3%	0	0	0	110
4	Patlikuchi Pathar	96%	4%	0	0	0	104
5	Tetlir tol	97%	3%	0	0	0	89
6	Karertal	95%	5%	0	0	0	58
	Total	97%	3%	0	0	0	759

Source: GP Secretary, Mr Nurul Islam and validation FGD and transect walk

Table No: 3.4 - Government Properties/Buildings

#	Government properties	Bhatkuchi	Barpalli	Kapoha	Patlikuchi Pathar	Tetlir tol	Karertal	Remarks
1	AWC	7	2	3	2	3	4	
2	Primary school	7	1	1	1	2	1	
3	ME School	2	0	1	0	1	1	
4	High school	1	0	0	0	1	1	
5	HSC	0	0	0	0	0	0	
6	Colleges	2	0	0	0	0	0	
7	Gram Panchayat office	1	0	0	0	0	0	
8	PHC Dispensary building S/C	1	0	0	0	1	0	
9	Veterinary hospital	0	0	0	0	0	0	
10	Govt Quarters – Numbers	0	0	0	0	0	0	
11	Community Hall	1	0	0	0	1	0	
	Total	22	3	5	3	9	7	

Source: Data collected from GP, CRC (education) through GP level FGD validated during village level FGD and transect walk.

Table No: 3.5 -Transportation Access available in the village

#	Name of Village/habitat	NH passes	SH Passes	Village Road length	Railway Station	Port/boat base	Remarks
1	Bhatkuchi	No	No	10 KM Kuccha	No	4 boats	
2	Barpalli	No	No	8km	No	Nil	
3	Kapoha	No	No	6km kuccha	No	2 boats	
4	Patlikuchi Pathar	No	No	4km Kuccha	No	Nil	
5	Tetlir tol	No	No	7km Kuccha	No	Nil	
6	Karertal	No	No	7km Partially kuccha	No	Nil	
	Total						

Source: Data collected from GP and Local people of different wards of the village through GP level and village level FGDs.

Table No: 3.6 - Transportation Services available in the village

#	Name of Village/habitat	Taxi/Jeep	Tractor	Trucks	Two wheelers (Bike/Cycle)	Route Bus Govt/Pvt	Ferry/Boats Services	Carts/Tonga	Other (specify)
1	Bhatkuchi	Whole day	11	2	120	Whole day	Whole day	1	
2	Barpalli	Whole day	2	2	25	Whole day	0	0	
3	Kapoha	Whole day	4	1	20	Whole day	0	0	
4	Patlikuchi Pathar	Whole day	2	2	40	Whole day	0	1	
5	Tetlir tol	Whole day	4	8	25	Whole day	0	1	
6	Karertal	Whole day	5	8	180	Whole day	0	0	
	Total								

Source: Data collected from GP and Local people of different wards of the village through GP level and village level FGDs.

Table No: 3.7 - Domestic Water facilities

#	Name of Village/habitat	No. of HH	Piped Water Supply	Public Tap	Tube Well		Open well	Pond	River	Remarks
					Functional	Defunct				
1	Bhatkuchi	1235	Under construction	Under construction	20	8	Nil	Nil	Yes	
2	Barpalli	272	Nil	Nil	15	6			No	
3	Kopoha	607	Under construction	Under construction	12	3			Yes	
4	Patlikuchi Pathar	449	Nil	Nil	14	5			No	
5	Tetlir tol	620	Nil	Nil	18	3			No	
6	Karertal	583	Nil	Nil	23	4			No	
	Total									

Source: Data collected from PHED, Assistant Engineer, Barpeta Sub-Division.

Table No 3.8- Power /Energy

#	Name of Village/habitat	No: of HH	Electricity connection available	No. of hours	Electricity not available	lantern	Gas connectivity	Kerosene stoves	Chula / Fire wood	Renewable energy
1	Bhatkuchi	1235	547	6	688	688	210	0	1025	7
2	Barpalli	272	160	6	112	112	130	0	142	2
3	Kopoha	607	206	6	401	401	210	0	397	0
4	Patlikuchi Pathar	449	102	6	347	347	190	0	259	0
5	Tetlir tol	620	280	6	340	340	220	0	400	5
6	Karertal	583	341	8	242	242	340	0	243	0
	Total	3766	1636	38	2130	2130	1300	0	2466	14

Source: Data collected from Electricity (ASEB) office, Barpeta, Gas Agency, Barpeta and GP office. Validated through Panchayat and village level FGD

Table No 3.9 - Health Facilities

#	Name of Village/habitat	P H C	Sub-Center/Dispensaries	Doctors	Nurses	AN Ms	AS HA staff	No. of beds	Diagnostic Centers	% of Immunisation	Cold Chain available	Pvt Clinics	AYU SH
1	Bhatkuchi	0	1	0	0	2	4	0	0	39	0	0	0
2	Barpalli	0	0	0	0	0	2	0	0	55	0	0	0
3	Kapoha	0	0	0	0	1	2	0	0	53	0	0	0
4	Patlikuchi Pathar	0	0	0	0	1	2	0		79	0	0	0
5	Tetlir tol	0	1	0	0	1	6	0	0	49	0	0	0
6	Karertal	0	0	0	0	0	2	0	0	51	0	0	0
	Total	0	2	0	0	5	18	0	0	54.33	0	0	0

Source: The data collected from BPM, Block Primary Health Center, Mandia.

Table No: 3.10 - Health Access - distance from village

#	Name of Village/habitat	PHC (In KMs)	Taluk Hospitals (In KMs)	District Hospitals (In KMs)	Multispecialty hospitals (In KMs)	Nursing homes (In KMs)	Availability of Ambulance (In KMs)
1	Bhatkuchi	4	4	5	0	5	4
2	Barpalli	4	4	5	0	5	4
3	Kapoha	2	2	8	0	8	2
4	Patlikuchi Pathar	3	3	7	0	7	3
5	Tetlir tol	5	5	4	0	5	5
6	Karertal	6	6	4	0	4	4
	Total (Average)	4	4	5.5	0	5.66	3.66

Source: The data collected Block Primary Health Center, Mandia

Table No: 3.11- Land

#	Name of Village/habitat	No. of HH	Landless (%)	Small (Marginal) (%)	Medium (Small) (%)	Big (%)	Government land (in Ha)	Forest cover	Any other
1	Bhatkuchi	1235	25	36	34	5	425.64	0	Bricks industry in 136 Ha
2	Barpalli	272	18	54	25	3	15.58	0	0
3	Kopoha	607	13	45	38	4	33.56	0	0
4	Patlikuchi Pathar	449	14	43	40	3	6.11	0	0
5	Tetlir tol	620	10	46	4	2	52.67	0	0
6	Karertal	583	16	45	35	4	25.67	0	0
	Total (Average)	3766	16	44.8333	29.3333	3.5	559.23	0	136 Ha

Source: Agriculture Department (Village level Extension Worker and Office of the Circle Officer (lot Mondals)

Table No: 3.12 - Crops and Irrigation facilities (No. of HH)

#	Name of Village/habitat	Crops cultivated	Area Cultivated (in Ha)	Irrigated (Canal, tube/open well) (STW=Shallow Tube Well)	Dryland (Rain fed)	Period	Total Area under crop Insurance	Remarks
1	Bhatkuchi	Rabi	230	STW	Nil	Sept-Oct	Nil	
		S. Paddy	410	30% canal/70%STW	Nil	Nov-Dec	Nil	
		Jute	50	STW	Nil		Nil	
2	Barpalli	Rabi	60	STW	Nil	Sept-Oct	Nil	
		S. Paddy	150	100%STW	Nil	Nov-Dec	Nil	
		Jute	40	STW	Nil	March - Apr	Nil	
3	Kapoha	Rabi	53	STW	Nil	Sept-Oct	Nil	
		S. Paddy	250	60% canal/40% STW	Nil	Nov-Dec	Nil	
				STW	Nil		Nil	
4	Patlikuch Pathar	Rabi	90	STW	Nil	Sept-	Nil	

						Oct		
		S. Paddy	140	30% canel, 70% STW	Nil	Nov- Dec	Nil	
				STW	Nil		Nil	
5	Tetlirtol	Rabi	210	STW	Nil	Sept- Oct	Nil	
		S. Paddy	270	STW	Nil	Nov- Dec	Nil	
		Jute	80	STW	Nil	March - Apr	Nil	
6	Karertal	Rabi	50	STW	Nil	Sept- Oct	Nil	
		S. Paddy	110	STW	Nil	Nov- Dec	Nil	

Source: Agriculture department, Village Agriculture Extension Worker.

Table No: 3.13- Livelihood Matrix

#	Livelihood/Occupation		Bhatkuchi	Barpalli	Kapoha	Patlikuc h Pathar	Tetlirtol	Karertal	Remarks
	No: of Persons								
1	Farmers	Main Workers	520	103	247	177	327	75	
		Marginal Workers	66	2	2	5	11	7	
2	Agri Labourers	Main Workers	115	133	30	11	162	40	
		Marginal Workers	388	27	134	14	8	35	
	Household Industry	Main Workers	184	16	32	11	17	177	
		Marginal Workers	71	3	12	4	7	0	
16	Others (Other workers)	Main workers	680	132	473	61	436	260	
		Marginal workers	243	22	18	10	192	21	

Source: The above table is sourced from the district census handbook of Barpeta based on 2011 Population Census.

Table No: 3.14 -Financial Institutions

#	Access to financial needs	Bhatkuchi	Barpalli	Kapoha	Patlikuchi Pathar	Tetlir tol	Karertal	Remarks
1	Nationalised Banks/ CSP	0	0	0	0	1	0	
2	Regional Rural Banks/ CSP	0	1	0	0	0	0	
3	District Co-operative Banks	0	0	0	0	0	0	
4	Private Banks	0	0	0	0	0	0	
5	Chit Funds	0	0	0	0	0	0	
6	Private money lenders	0	0	0	0	0	0	
7	Micro-finance (Bandhan)	9	4	5	4	3	5	
8	Thrift and Credit –SHGs	15	12	8	10	13	17	
9	Any other	0	0	0	0	0	0	
	Total	24	17	13	14	17	22	

Source: Data related to SHGs are collected from Community resource person NRLM, Other data are collected through Panchayat and Village level FGD.

Table No:3.15- Social Protection/Government Schemes

#	Villages	Bhatkuchi		Barpalli		Kapoha		Patlikuchi Pathar		Tetlir tol		Karertal	
		Available	Access how many	Available	Access how many	Available	Access how many	Available	Access how many	Available	Access how many	Available	Access how many
		Programs/Schemes											
1	MGNREGS ⁸	Y	1028	Y	282	Y	554	Y	240	Y	500	Y	500
2	National Livelihood ⁹	Y	150	Y	145	Y	80	Y	100	Y	130	Y	170
3	PDS ¹⁰	Y	1005	Y	247	Y	518	Y	393	Y	507	Y	476

⁸ MGNREGS (Access how many) includes total number of Job card holders

⁹ It includes total members in SHG who are benefitted from the scheme

¹⁰ Includes total beneficiary HH receiving benefits from PDS

4	NRHM ¹¹	Y	204	Y	49	Y	137	Y	144	Y	33	Y	37
5	IAY ¹²	Y	317	Y	81	Y	110	Y	104	Y	89	Y	58
6	Skill India	N		N		N		N		N		N	
7	Nutrition support to Adolescent girls and lactating mother ¹³	Y	144	Y	33	Y	78	Y	51	Y	80	Y	62
8	Elderly Pension	Y	82	Y	11	Y	23	Y	7	Y	15	Y	21
9	Edu. Scholarship	Data not available											

Source: Data related to Nutrition support to Adolescent girls collected from AWC.

Table No: 3.16- Community Based Groups

#	Name of Village/habitat	Community based groups/CSO			
		No: Women SHGs	No: of Farmers Union	No: Youth groups	No: Kishori Sanga
1	Bhatkuchi	15	0	8	0
2	Barpalli	12	0	1	0
3	Kapoha	8	0	2	0
4	Patlikuchi Pathar	10	0	0	0
5	Tetlir tol	13	1	2	0
6	Karertal	17	0	3	0
	Total	75	1	16	0

Source: Data collected from CRP, NRLM and local people.

¹¹ Includes beneficiaries from different schemes under NRHM in total that are presently accessing (2015-16)

¹² IAY includes total Beneficiaries so far

¹³ Nutrition support provided to pregnant and nursing mothers for the current financial year (2015-16)

Table No: 3.17 - Government Staff

#	Name of the Revenue Villages	Gram Panchayat Staff (RD & PR)		Agri/Se ri/ Floriculture		Education		Revenue		Animal Husbandry		School		Colleges		Fair price shop		Police		F & ES	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	Bhatkuchi	3	1	0	0	1	0	1	0	0	0	2	2	6	1	0	0	0	0	0	0
2	Barpalli	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
3	Kapoha	0	0	0	0	0	0	0	1	0	0	8	8	0	0	0	0	0	0	0	0
4	Patlikuchi Pathar	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
5	Tetlir tol	0	0	0	0	0	0	0	0	0	0	2	5	0	0	0	0	0	0	0	0
6	Karertal	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0
	Total	3	1	0	0	1	0	1	1	0	0	7	4	6	1	0	0	0	0	0	0
												1	1	6	9						

Source: Data collected from CRC (Sarba Shiksha Abhiyan), Principal of Shankar Madhab Junior College and through Panchayat and village level FGDs.

Table No: 3.18 – Resource Inventory –First responders

7.3	Resource Inventory					
	Name of Revenue Village	Divers	Trained First-Aid persons	Volunteers	Distance of nearest police station from the village(in KM)	Distance of nearest F & ES station from the village(in KM)
1	Bhatkuchi	0	0	0	7	7
2	Barpalli	0	0	0	5	5
3	Kapoha	0	0	0	9	9
4	Patlikuchi Pathar	0	0	0	7	7
5	Tetlir tol	0	0	0	6	6
6	Karertal	0	0	0	4	4

Source: Data collected from panchayat and local people.

Table No: 3.19- Availability of Shelters - status

Village Name	Identification of Cyclone/ Flood Shelter with Capacity									
	Identified Shelters	Sq.ft	Capacity to hold	Rooms	toilets	Kitchen	Store	Electricity available	Water available	Easily accessible
Bhatkuchi	Nalirpar Bhatkuchi HS	3000	600	20	3	2	1	Y	Y	Y
	Skylark Club	400	100	1	0	0	0	N	N	Y
	GP Office	600	100	3	1	0	0	Y	N	Y
Barpalli	0	0	0	0	0	0	0	0	0	0
Kapoha	No 1014 Primary School	3000	500	11	2	1	1	Y	Y	Y
Patlikuchi pathar	0	0	0	0	0	0	0	0	0	0
Tetlirtol	0	0	0	0	0	0	0	0	0	0
Karertal	No 1003 Karertal LP and karertal ME School	400	60	3	1	1	1	Y	Y	N
	Shankar Madhav College	4000	700	11	2	0	1	Y	Y	Y

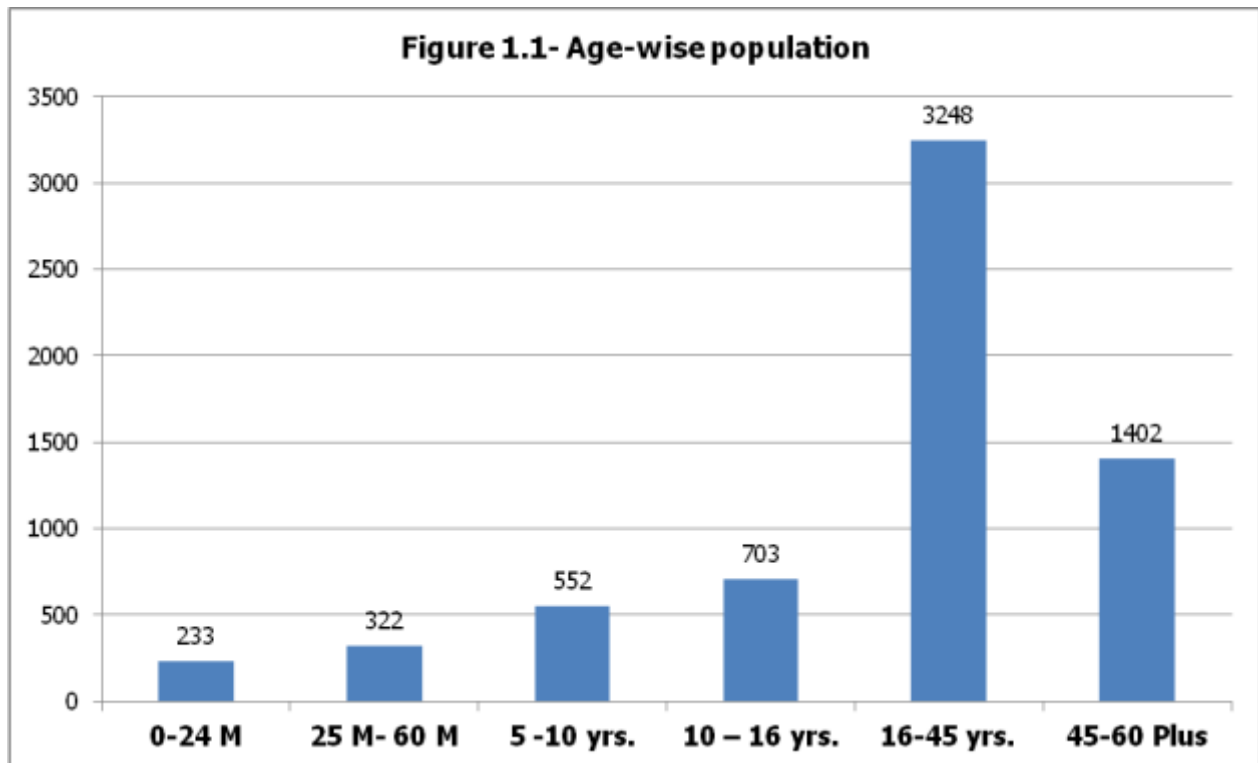
Source: Data collected from GP and local people of several wards.

Table No: 3.20 - Seasonality of Hazard in GP/Village

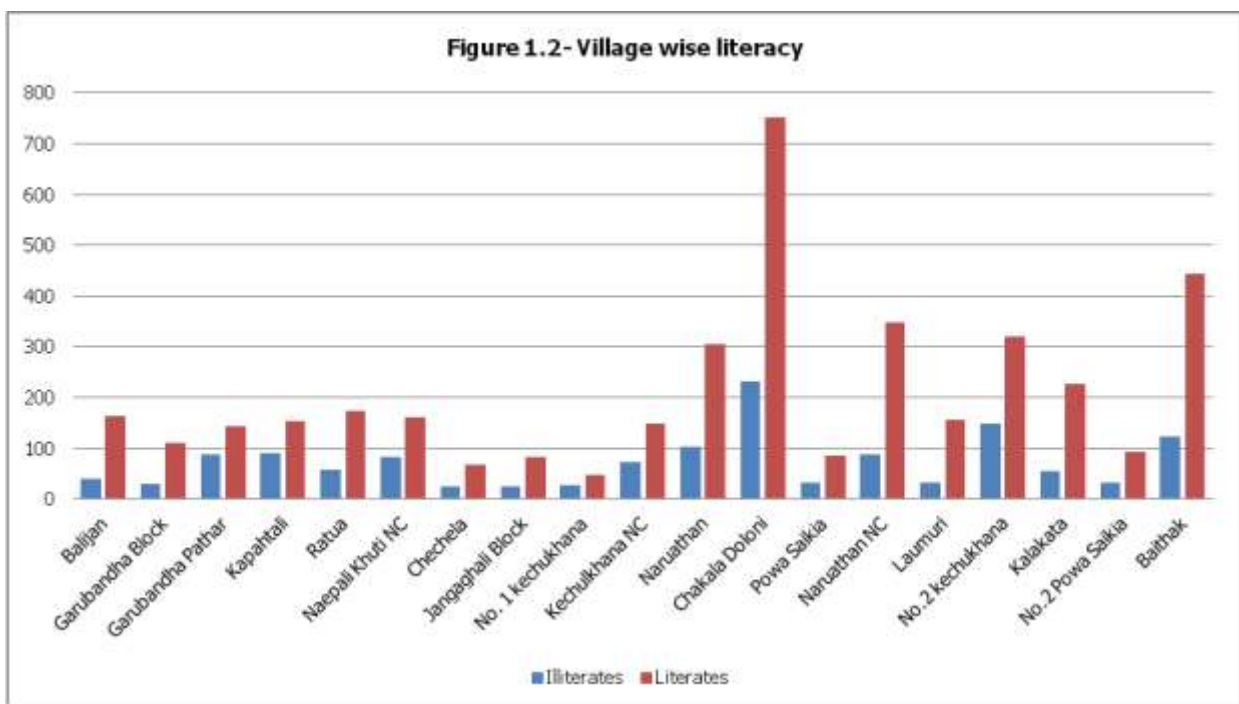
Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hazard												
Flood												
Storm												
Fire												
Erosion (Bhatkuchi, Kopoha)												
Accident												
Pollution from brick inns												

Source: Data collected from GP office and local people during FGD at village level.

Annexure 4- Figures in support of the arguments in Chapter I

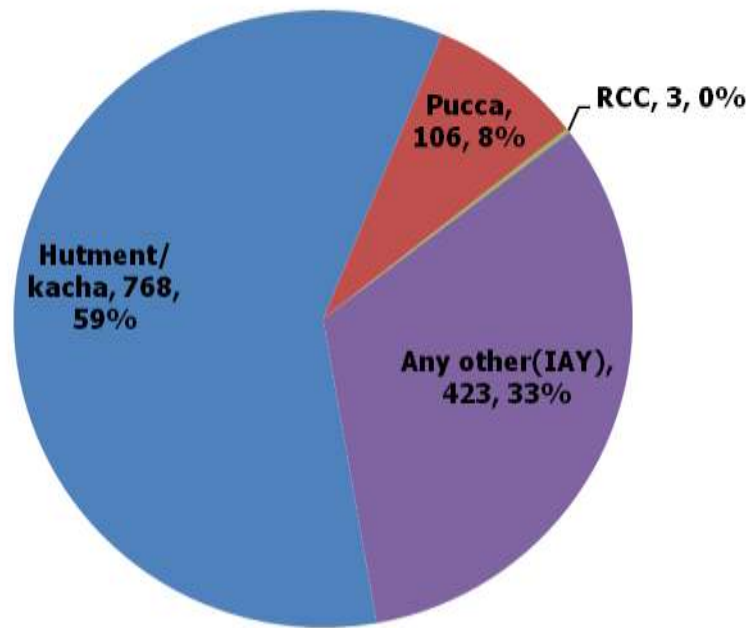


Source: ANM in-charge of Naruathan and Kechukhana Health Sub-Centres. The source year of survey is 2014-15



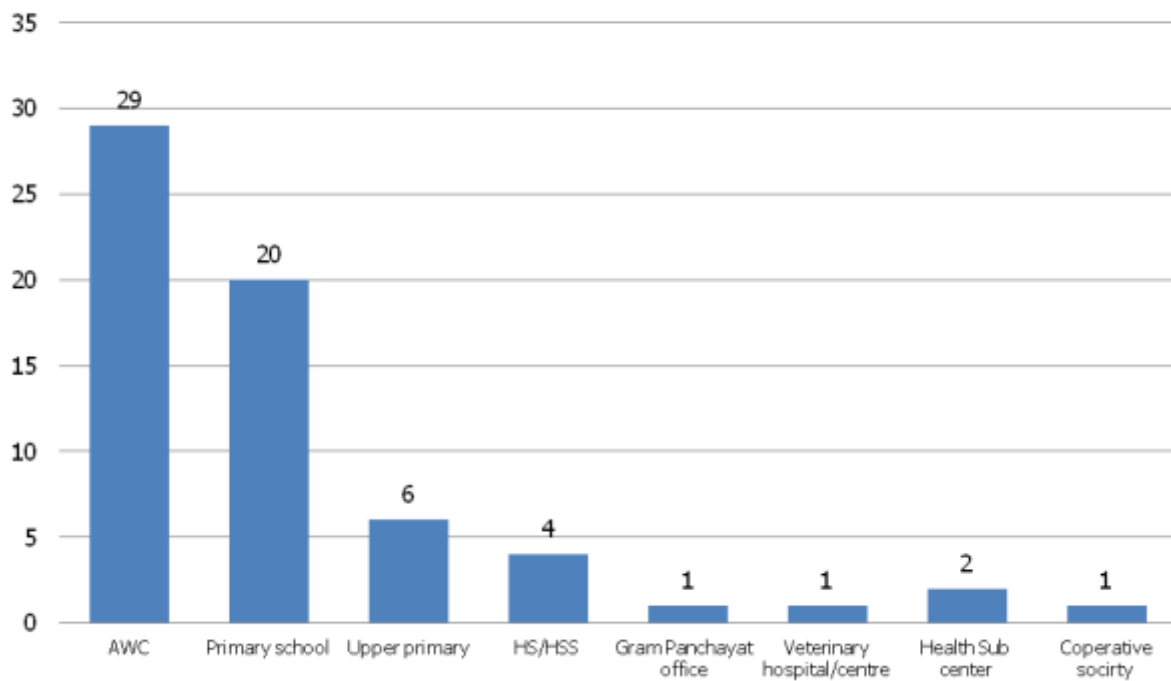
Source: For Literates and Illiterates data sources is district Census handbook of Dhemaji.

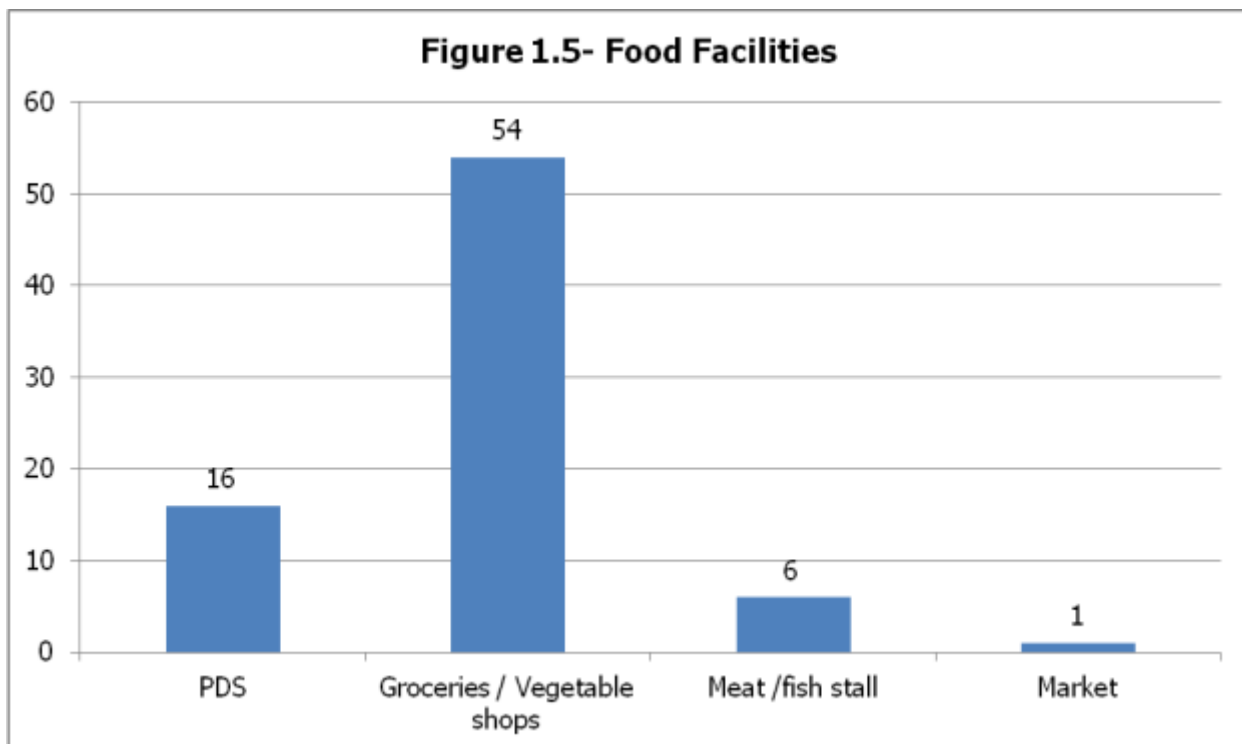
Figure 1.3- Types of Housing



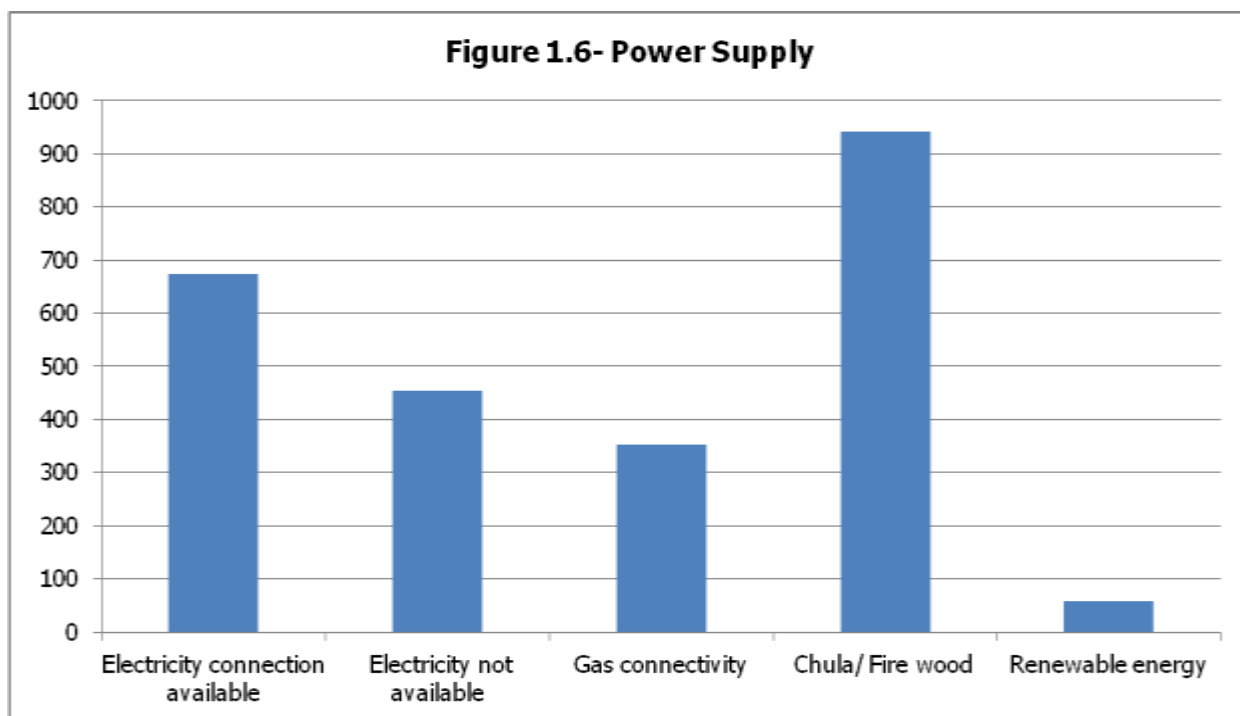
Source: Data provided by GP President of Naruathan GP Mr. Sasanka Gogoi

Figure 1.4- Status of Government Properties/buildings



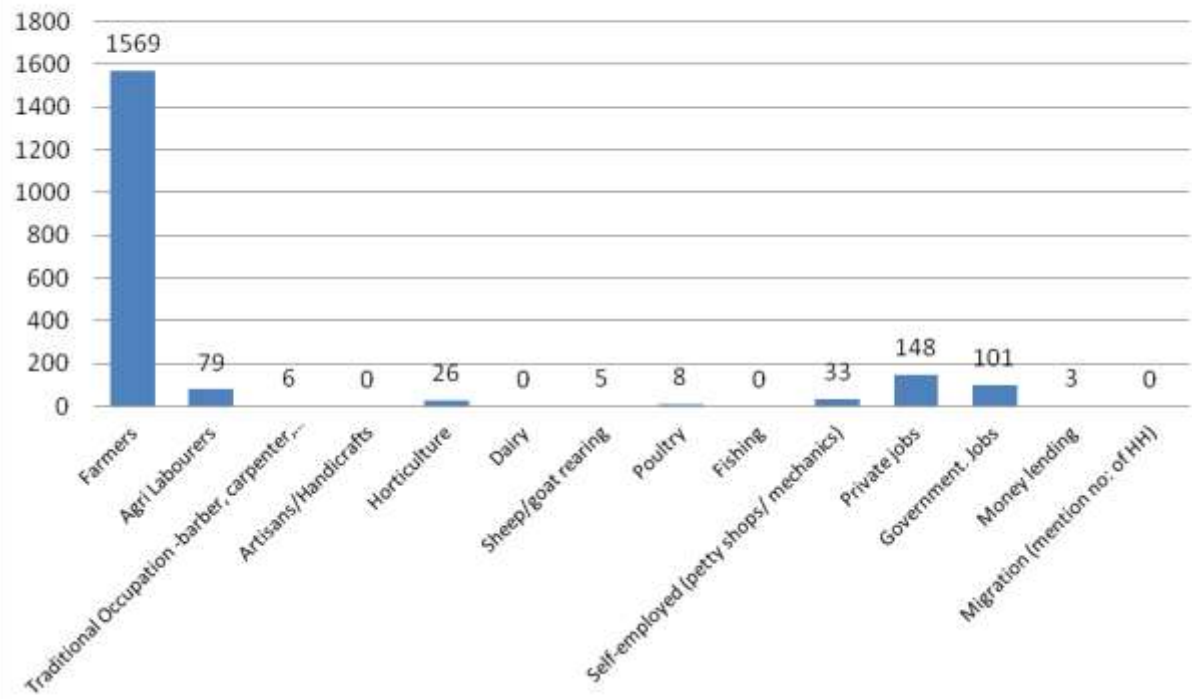


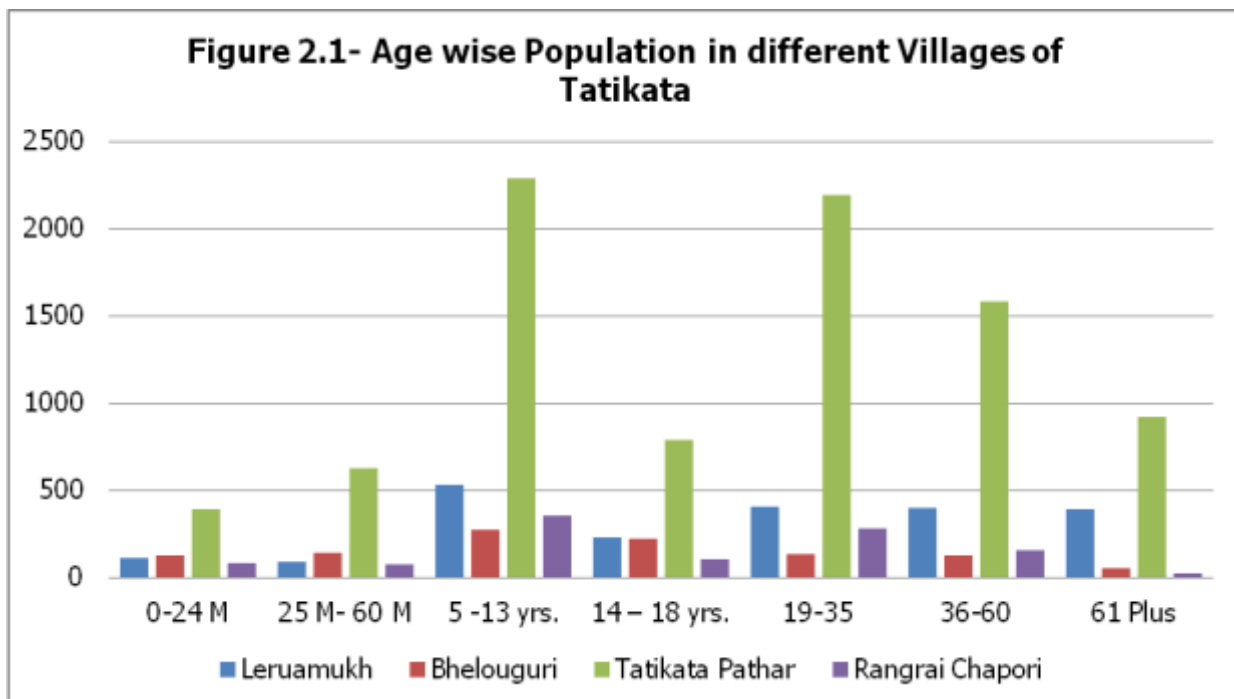
Source: Data collected from Panchayat office and ward members through GP level meeting and Ward level FGDs.



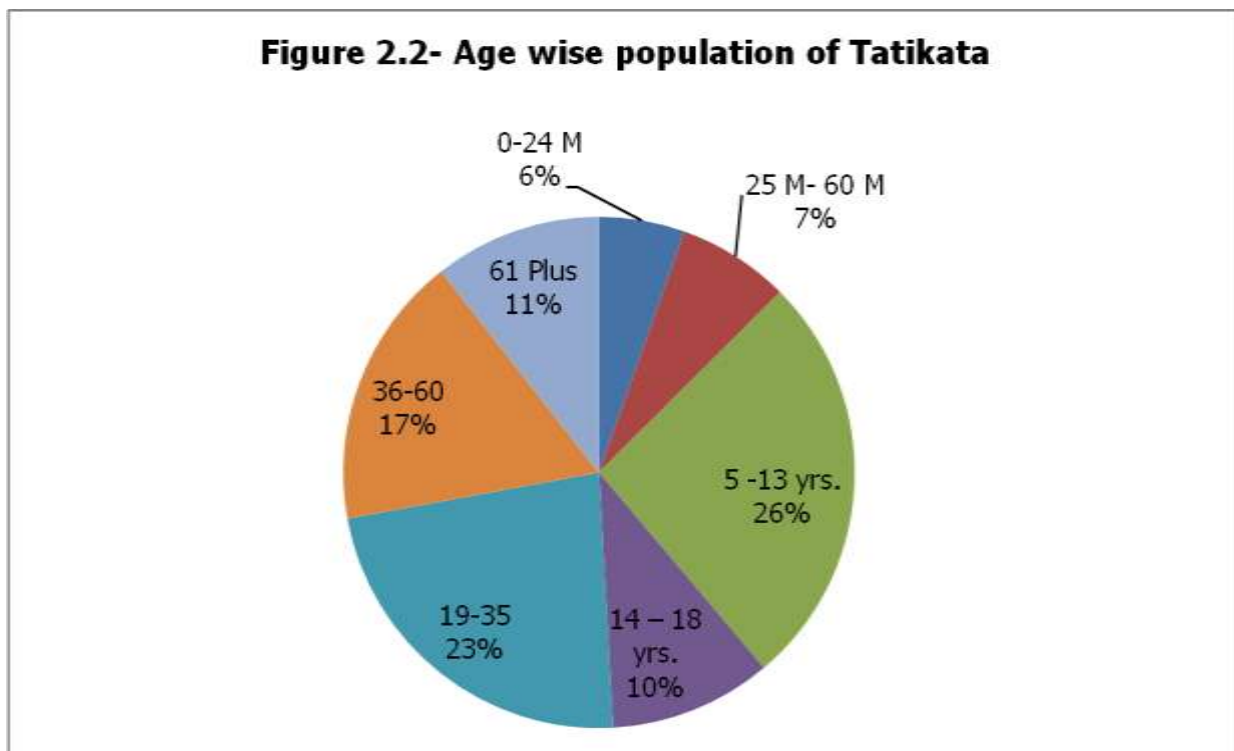
Data collected from Panchayat through GP level meeting as well as through ward level FGDs.

Figure 1.7- Livelihood Matrix

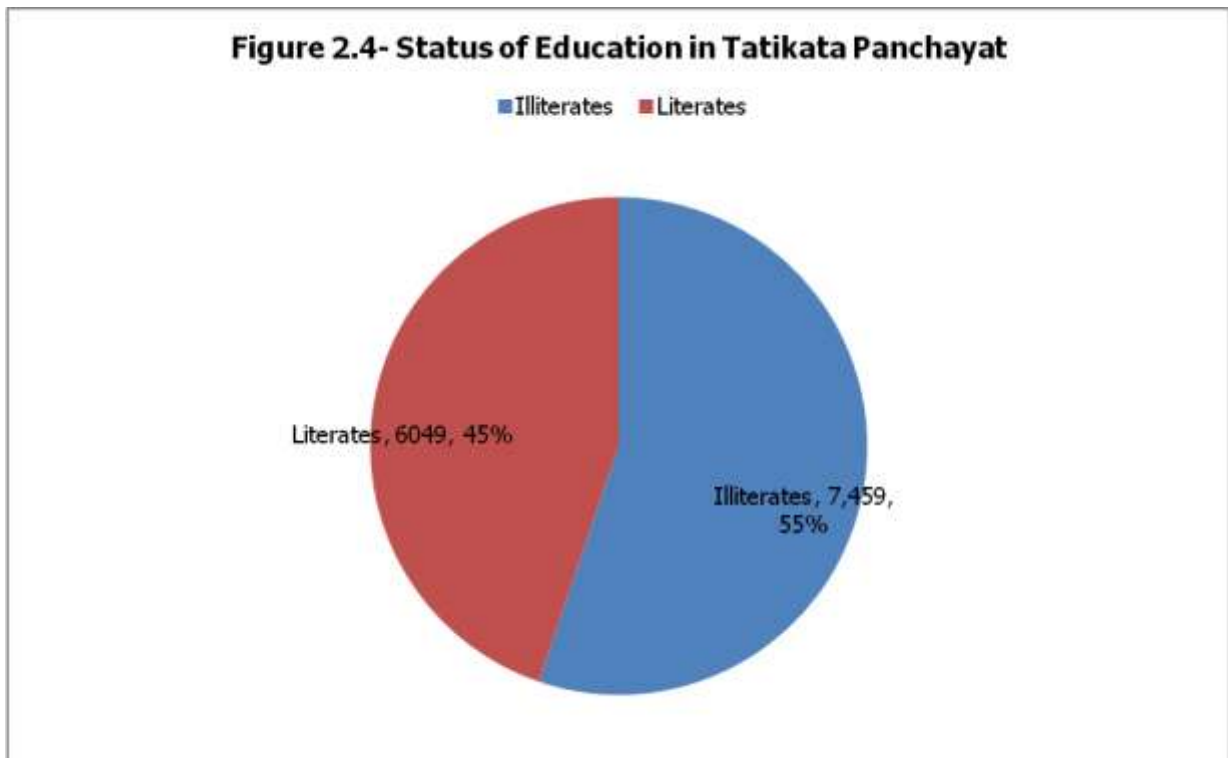
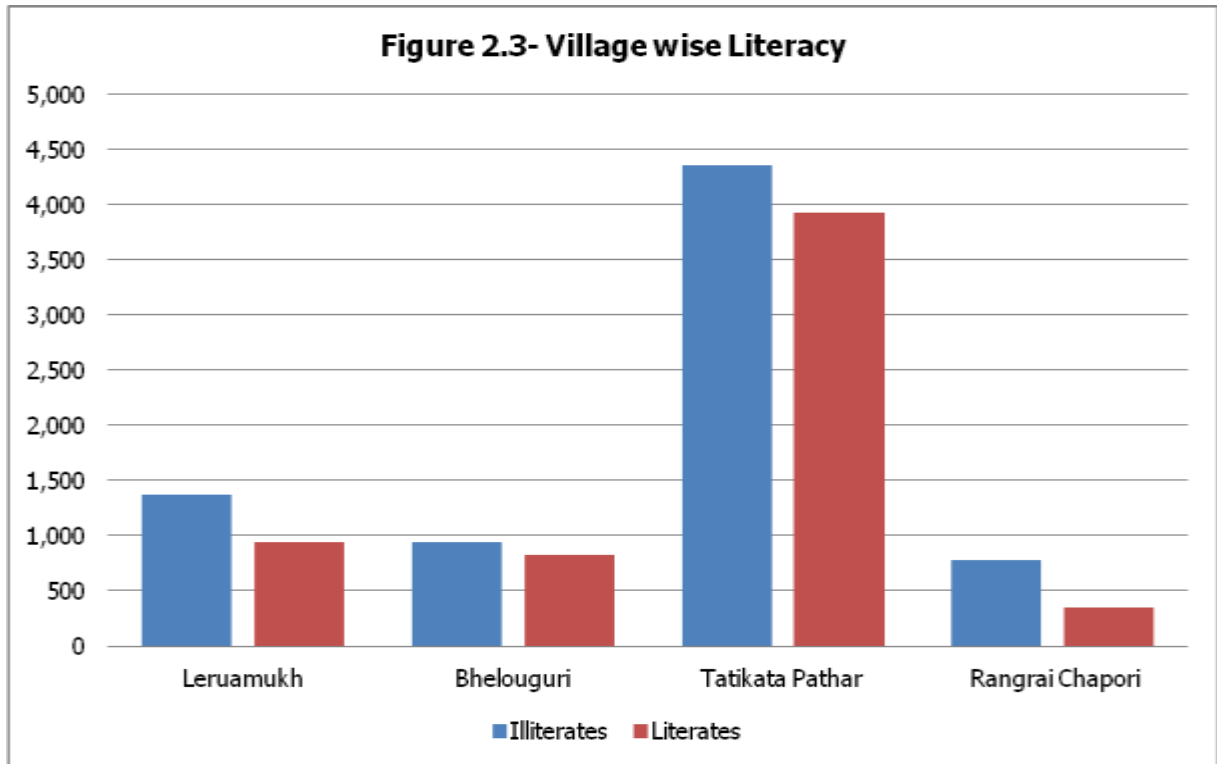




Annexure 5- List of Figures in support of the arguments in Chapter II

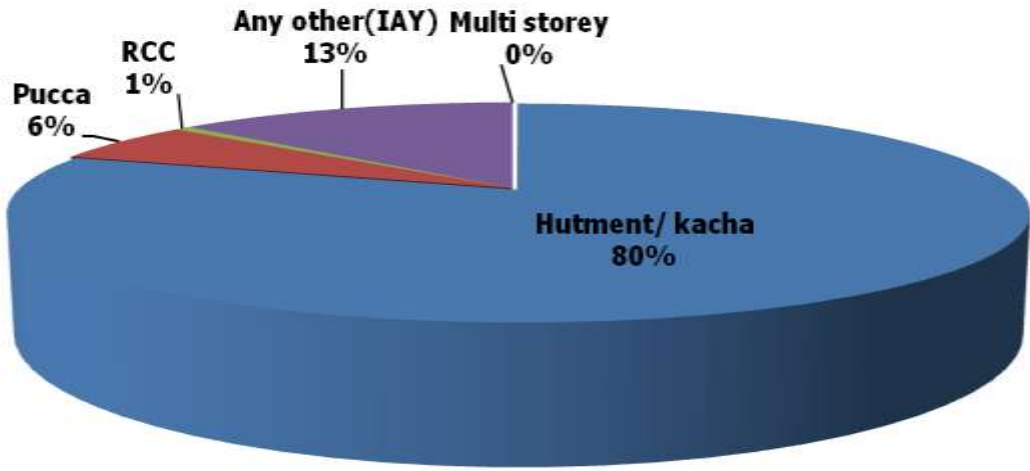


Source: Population data available with Health Sub-Centres in the GP updated till 2014-15. The 2011 census doesn't have age wise population.



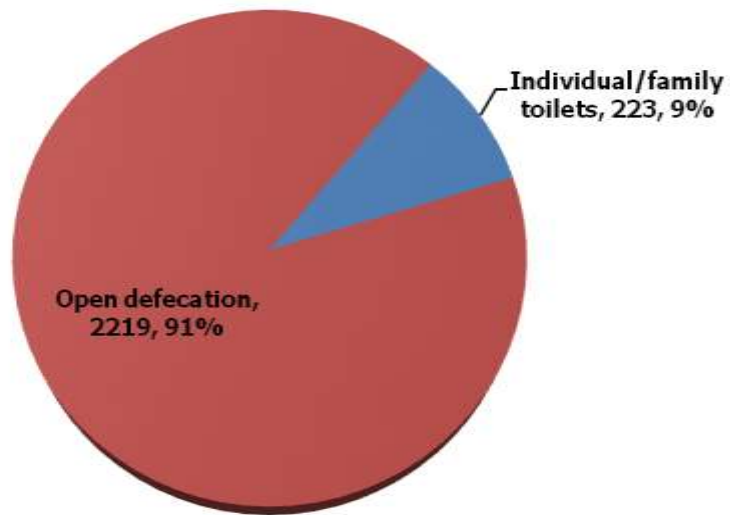
Source: The literate and illiterate numbers are as per the 2011 census taken from the District Census handbook,

Figure 2.5- Housing Pattern at Tatikata Panchayat



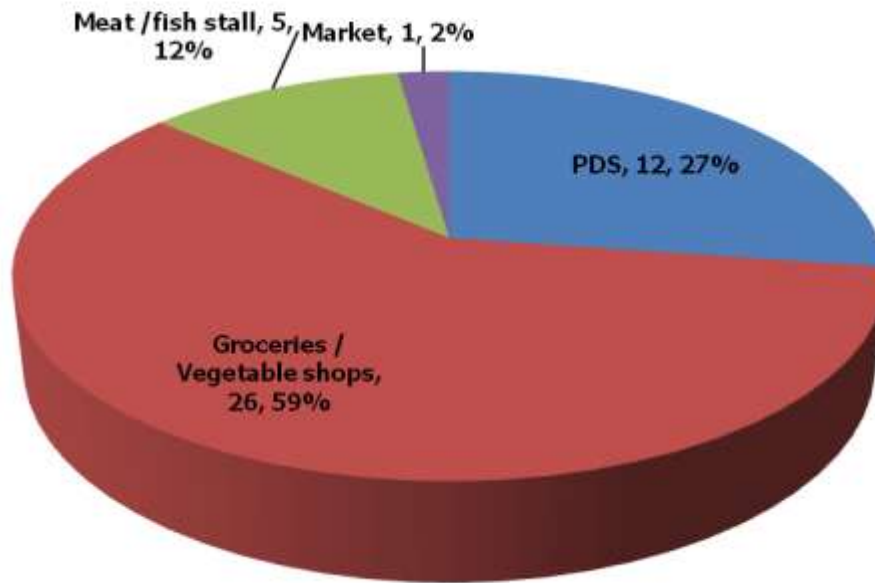
Data collected from Gaon Panchayat

Figure 2.6- Sanitation Facilities at Tatikata



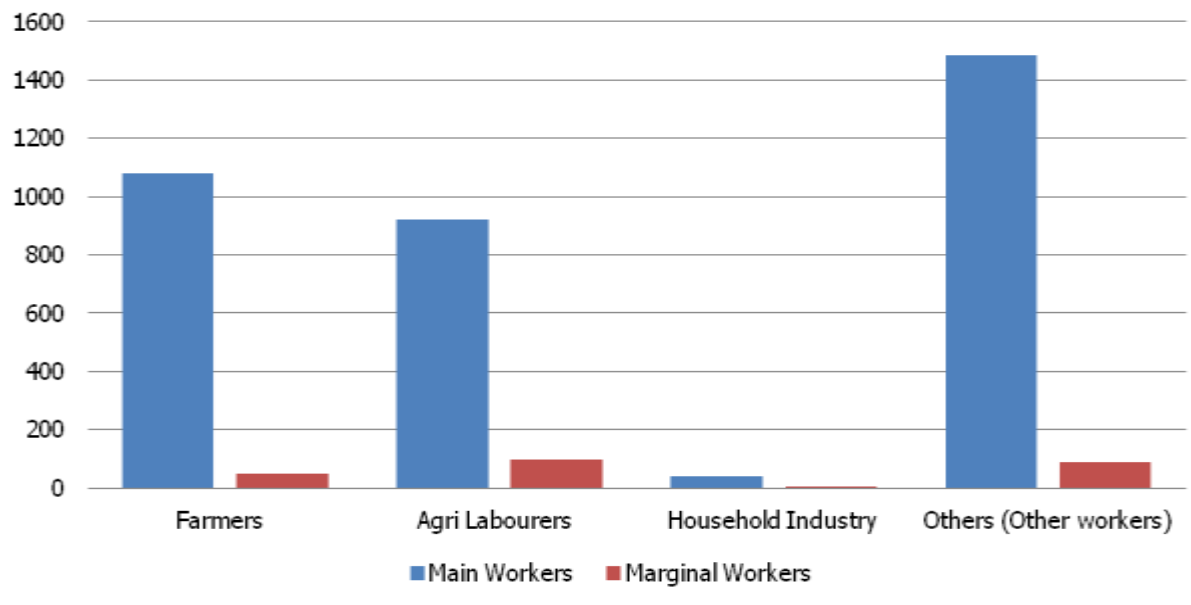
Source: data collected from Assistant Executive Engineer PHED Dhing Sub Division

Figure 2.7- Food Facilities at Tatikata



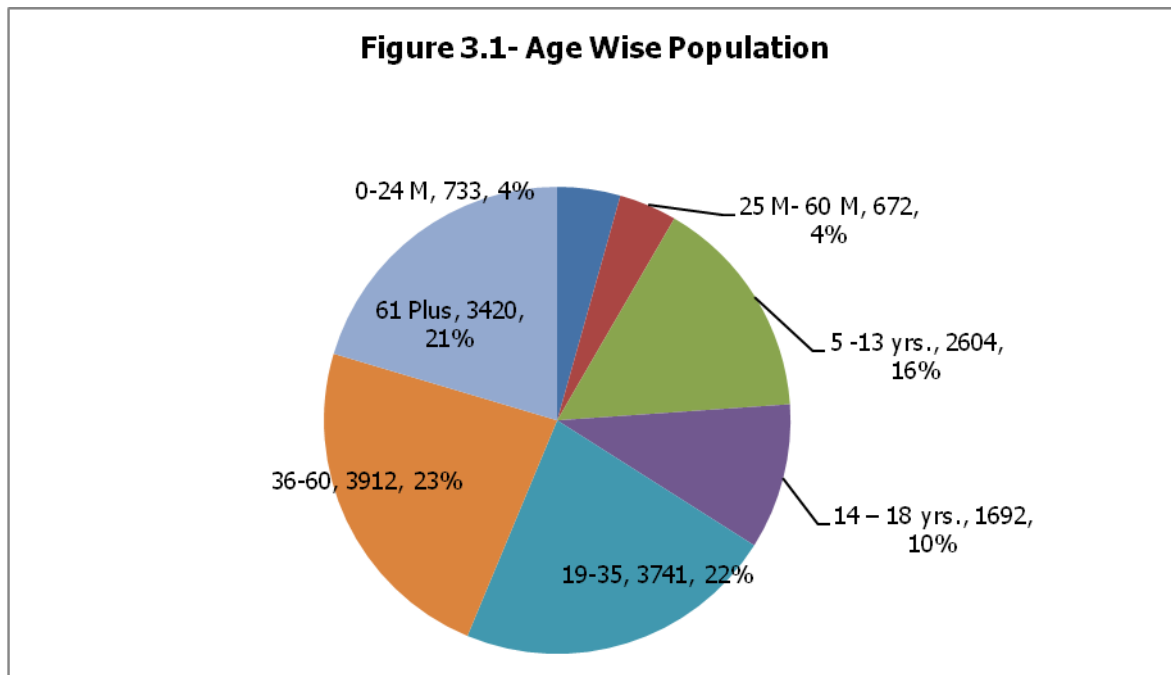
Source: Data collected from Gaon Panchayat, Ward members, community leaders, health workers, teachers etc through Panchayat level FGD

Figure 2.8- Livelihood Pattern at Tatikata



Source: District Census Handbook of Morigaon, 2011.

Annexure 6- Figures in support of the arguments in Chapter III



Data source: Health Sub centres and ANMs in-charge of respective villages as per the Household (HH) survey conducted by HSC in 2014-15.

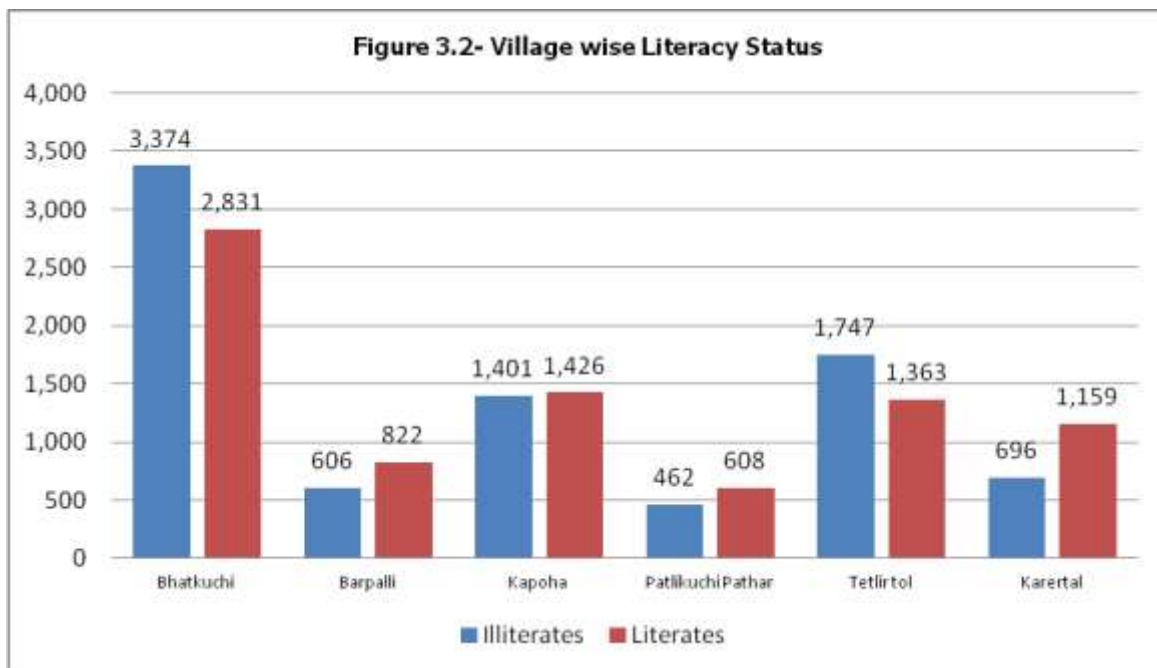
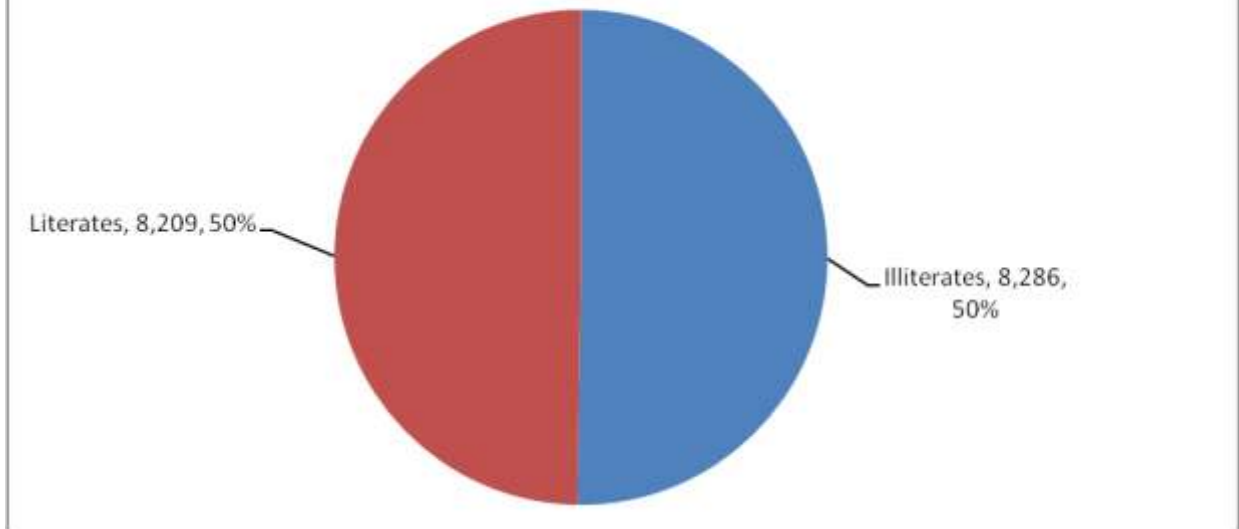
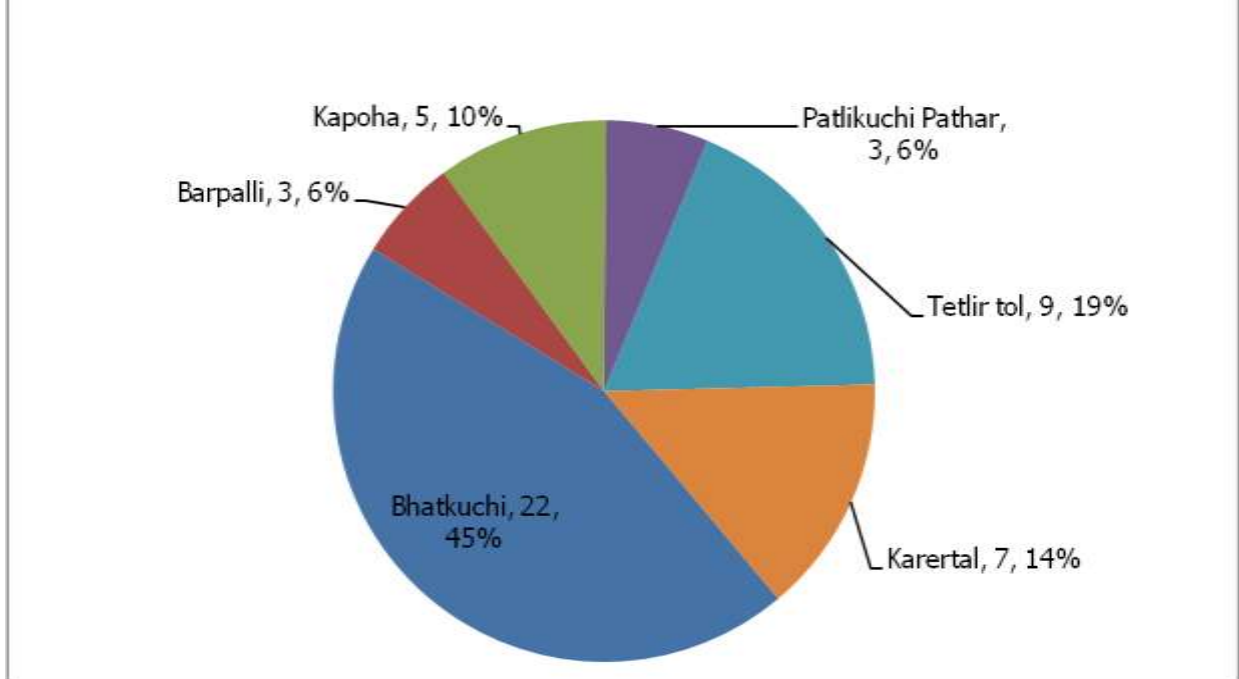


Figure 3.3- Education in Bhatkuchi

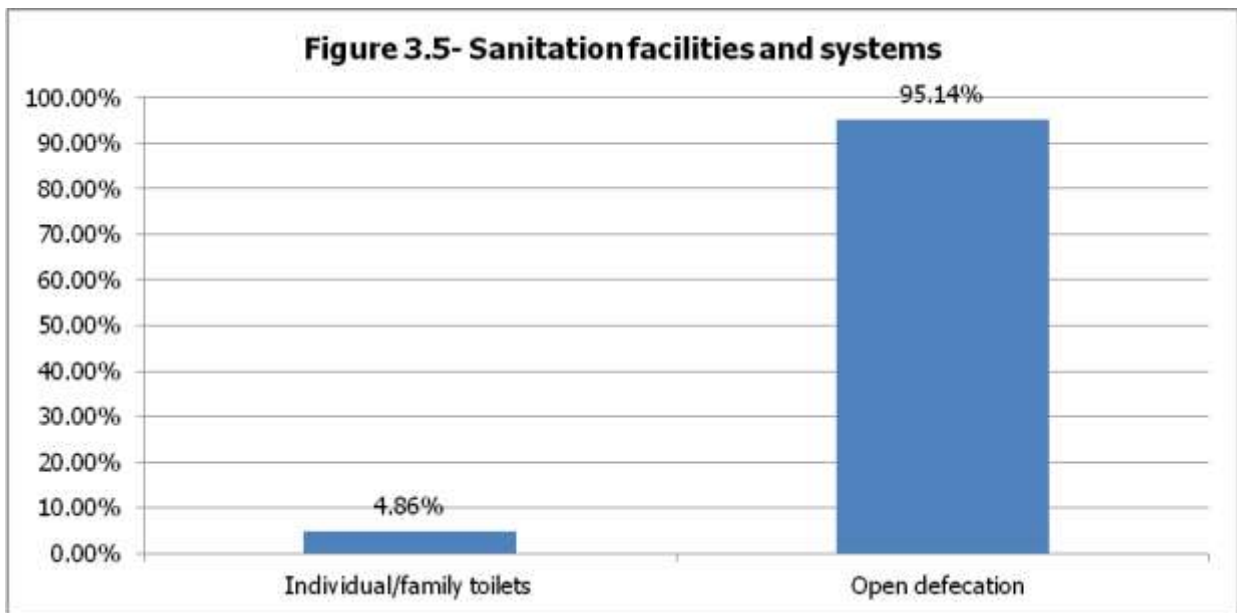


Source: The number of illiterate and literate has been sourced from the District Census Handbook of Barpeta based on 2011 Population census.

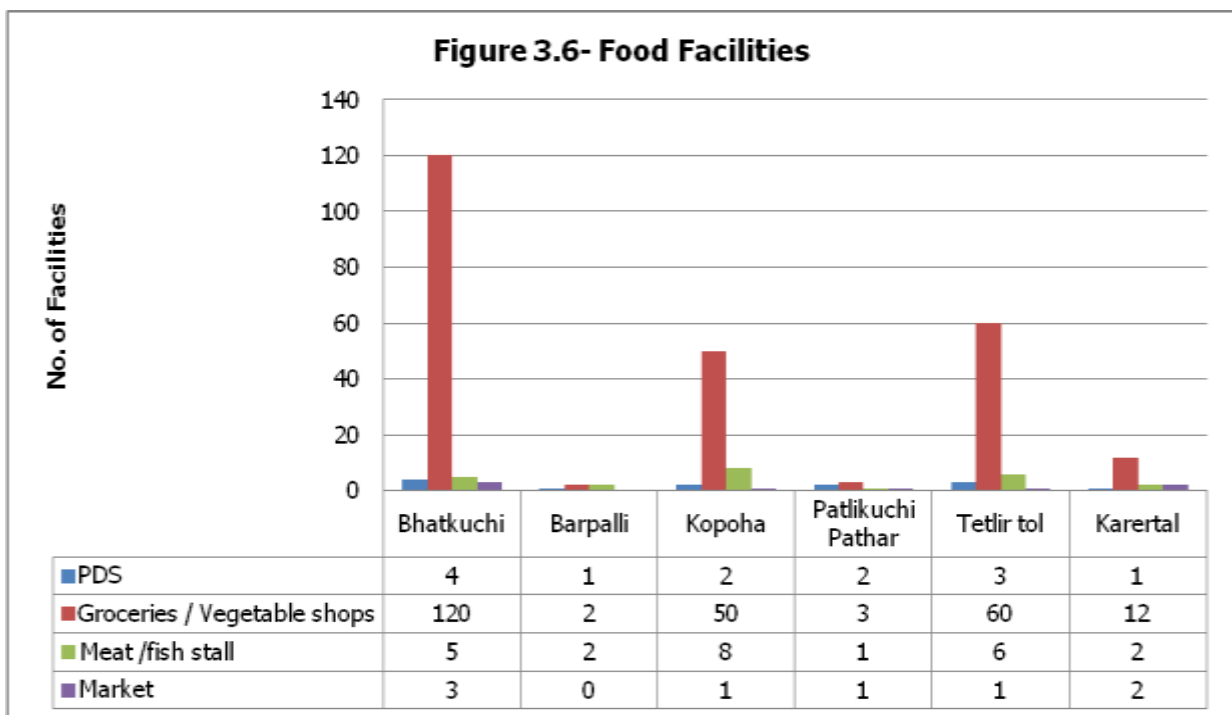
Figure 3.4- Village wise location of Government Properties and buildings



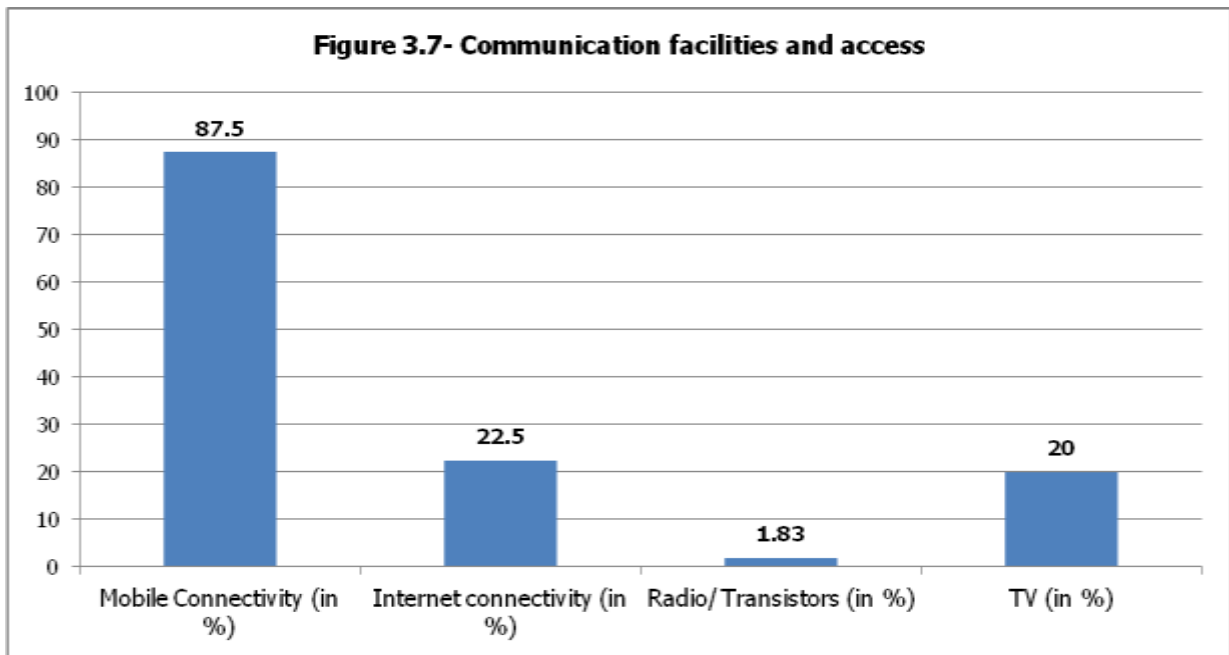
Source: Data collected from GP, CRC (education) through GP level FGD validated during village level FGD and transect walk.



Source: Data collected from PHED, Assistant Engineer, Barpeta Sub-Division









Source: Data collected from Panchayat and local people through FGD at Panchayat and village level.



Source: Data collected from panchayat and local people through Panchayat and village level FGDs and is approximate.

Annexure 7: Photo Documentation of Base Line Study at Naruathan, Dhemaji

	
<p>The main Road of Powasaikia connecting to Kalakata and Baithak village. This happened to be a PWD road which was devastated by 2012 flood and never constructed.</p>	<p>Temporary Anganwari centre functional at Kalakata village.</p>
	
<p>The vulnerable broken bamboo bridge used for transportation at kalakata village</p>	<p>As part of flood relief program a raised tube well constructed in 2012 lies defunct.</p>
	

Primary school at No 2 Kechukhana devastated by flood this year.



Foot bridge constructed by one of the household at Ratua. This is the temporary arrangement they adopt during flood.



A village road still reeling under flood water at Kechukhana village.



RCC bridge get devastated by flood this year at Laumuri village.



House with raised plinth (chang ghar) which are traditional coping measures for floods for the Mishing community (Left). Normal houses with raised plinth by other communities

Annexure 8: Photo Documentation of Base Line Study at Tatikata, Morigaon

	
<p>(left) A girl indicating level of water reached during this years flood over a hand pump (tube well) at Rangrai Chapori. (Right) a school made of thatch, students indicating the water level reached during the flood this year</p>	
	
<p>Houses at Rangrai Chapori are build with thatch to deal with frequent flood damage</p>	<p>Children directly consuming water from hand pump at Moerabari Rastrbhasa School which was used as shelter. High iron content has made the platform yellowish.</p>
	
<p>One of the buildings of Maerabari Balak Vidyalaya (shelter) with raised plinth</p>	<p>A Toilet in unusable condition Maerabari Balak Vidyalaya (shelter)</p>



Household level grain storage at Leruamukh village. Extreme difficulties are faced in shifting grains during severe floods



A raised Platform at Leruamkukh village constructed under MGNREGS



FGDs conducted at Tatikata Pathar (left) and Rangrai Chapori for the baseline study



A Kucca household toilet at Behlouguri village. Such toilets are devastated after floods rendering villagers to go for open defecation



A view of Assam Catkin Yew (Kashful) at Ranrai Chapori village which are not only used for building thatched houses but also for making mattresses and thus have economic value.

Annexure 9: Photo Documentation of Base Line Study at Bhatkuchi, Barpeta

	
<p>Temporary raised household toilet (katcha) at Barpalli village.</p>	<p>Breached Agri embankment during flood in 2015, temporary bamboo bridge has been constructed by the community people for transportation in Bhatkuchi village.</p>
	
<p>He is indicating the level of water reached during this year flood inside the school infrastructure at Bhatkuchi village.</p>	<p>Agri bhandh (embankment is also serving the purpose of transportation in the village which get defunct during flood at Bhatkuchi village.</p>



Constant erosion of Bhelengi River at Bhatluchi village



GP office of Bhatkuchi Panchayat which is identified as shelter during flood.



Srimanata Shankar Madhab Junior college in Karertal Village is another identified flood relief shelter.



Raised tube well at Kopoha LP & ME school.



Irrigation canal flowing through Kopoha village

Raised temporary kaccha household toilet at Patlikuchi Pathar.

Annexure 10: CR Measuring tool used for Base Line Data Collection

UNDP India and MHA, GoI Community Resilience Indicators and Measuring Tool

Village/ City, Block								
District, State								
Name of Facilitator								
Address, Email, Phone number								
1. Physical / Infrastructural Indicators	Description of Indicator	Community Response Ratings (1 Lowest and 5 Highest)						Remarks
		Non availability	Availability	Equitable Access	Adequacy	Sustainability	Multi-Hazard Resilience	
		0 (<1)	1	2	3	4	5	
		Facility unavailable or partially available	Facility exists	Facility exists and is accessible to all households during 'normal' times	Facility exists, accessible during 'normal' times and of adequate quality	Facility exists, accessible during 'normal' times, of adequate quality, structurally safe and sustainable after the disaster	Facility exists, accessible during 'normal' times, of adequate quality and is structurally safe to withstand all kinds of hazards and is sustainable after any disaster	
Clean and safe drinking water facilities	Community has access to safe drinking water /facilities (e.g. storage facility,							

	bottled, piped, tank supply, etc. within 1 kms radius)							
Traditional water storage/conservation methods	Community practices traditional water storage/use methods (related to water purification, water conservation and use efficiency)							
Food quality during normal times	Community has access to quality food (e.g. storage facility, well balanced diet, hygiene, etc.)							
Transportation facility	Community has access to transportation facility (e.g. road, rail and air)							
Power and Energy	Community has access to reliable sources of power supply							

	and energy (e.g. electricity, solar energy, and/or others)							
Communication facilities	Community has access to reliable communication systems (Telephone, Mobile, radio and internet)							
Waste management facilities	Community has access to waste management facilities (solid and sewage)							
Sanitation facilities	Community has access to safe and clean sanitation facilities (e.g. toilettes, shower, etc.)							
Health Care facilities	Community has access to health care facilities (ambulance, health clinics, medical supply, physicians/medical practitioners, etc. within 5							

	kms radius of the village)							
Safe temporary shelter facilities	Community has access to safe evacuation (e.g. shelters, community centres, schools, religious places, etc. as well as evacuation routes)							
Traditional construction practices	Community adopts traditional construction practices (shelter, houses, roads, other community structures, etc.)							
Safe and multi-hazard resilient housing	Houses are pucca and strong enough to withstand high impact natural disasters							

		Community Response Ratings (1 Lowest and 5 Highest)						Remarks
2. Institutional/ Procedural Indicators	Description of Indicator	Non availability	Availability	Equitable Access	Adequacy	Sustainability	Multi-Hazard Resilience	
		0 (<1)	1	2	3	4	5	
		Facility unavailable or partially available	Existence of plans/institutions/procedures/personnel	Existence of plans/institutions/procedures/personnel and are based on Risk Assessment	Existence of plans/institutions/procedures/personnel, are based on Risk Assessment and community is aware of	Existence of plans/institutions/procedures/personnel, are based on Risk Assessment, community is aware of and practices it	Existence of plans/institutions/procedures/personnel, are based on Risk Assessment and community is aware of, practices it and is regularly updated	
Participation in Community-Based Disaster Management(CBDM) efforts	Institutional Mechanism exists to facilitate community participation in disaster management initiatives, including planning, preparedness, response, etc.							

Evacuation	Community is aware of disaster evacuation plan (e.g. evacuation routes, directions to shelters, evacuation equipments etc.)							
Early Warning	Systems exist to provide early warning and emergency information to the community (e.g. SMS, radio, TV, Social Network Service facilities, public address system, sirens, local traditional methods)							
Participation in mock drills	Community participates in periodic mock drills							
Adoption of safe practices	Community adopts safe practices (construction,							

	water conservation, natural resource management, etc.)							
Emergency management institutions and trained personnel in DM task forces at the local level	Community has emergency management institutions and trained personnel in DM task forces at the local level							
Traditional emergency communication methods	Community uses traditional approaches for early warning and emergency information dissemination (e.g. measuring of water levels, sirens, public address systems, beating of drums, etc.)							
Support groups	Community has support groups dealing with trauma, psycho-social care, disability, women &							

	children, etc.)							
Trained volunteers	Community has trained volunteers/Task Forces with specific skills (First Aid, Search & Rescue, Shelter management, crowd management, etc.)							
State of Environmental or ecological protection measures	Environmental / ecological protection measures taken up by government/NGOs/Private sector/Community							
Community awareness programmes	Community participates in awareness programmes on disaster resilience (e.g. formal education, community training, specific							

	needs education, etc.)							
3. Social Indicators	Description of Indicator	Community Response Ratings (1 Lowest and 5 Highest)						Remarks
		Non availability	Availability	Equitable Access	Adequacy	Sustainability	Multi-Hazard Resilience	
		0 (<1)	1	2	3	4	5	
		Facility unavailable or partially available	Facility exists	Facility exists and is accessible to all households during 'normal' times	Facility exists, accessible during 'normal' times and of adequate quality	Facility exists, accessible during 'normal' times, of adequate quality, structurally safe and sustainable after the disaster	Facility exists, accessible during 'normal' times, of adequate quality and is structurally safe to withstand all kinds of hazards and is sustainable after any disaster	

Social Protection Measures	Community has access to protection measures (e.g. PDS, MGNREGA, livelihood missions, pension, medical insurance etc)							
Community institutions and networks	Community has community institutions and networks (e.g. degree of connectivity), equity and social interaction across community groups (ethnicities, sub-culture, age groups, etc); community participation in decision making on development & disaster management							

Traditional medicine and health practitioners	Community practices traditional medicine and has access to the services of traditional health practitioners (such as Traditional Birth Attendants, Healers, etc.)							
Support services for People with Disability	Community has access to support services to meet the needs of People with Disability							
Support services for socially marginalized groups (specific to the context)	Community has support services to meet the needs of socially marginalized groups (specific to the context)							
Support services for women	Community has support services to meet the needs of women							
Support services for elderly	Community has support services to meet the							

	needs of elderly							
Support services for children	Community has support services to meet the needs of children							
4. Economic Indicators	Description of Indicator	Community Response Ratings (1 Lowest and 5 Highest)						Remarks
		Non availability	Availability	Equitable Access	Adequacy	Sustainability	Multi-Hazard Resilience	
		0 (<1)	1	2	3	4	5	
		Facility unavailable or partially available	Facility exists	Facility exists and is accessible to all households during 'normal' times	Facility exists, accessible during 'normal' times and of adequate quality	Facility exists, accessible during 'normal' times, of adequate quality, structurally safe and sustainable after the disaster	Facility exists, accessible during 'normal' times, of adequate quality and is structurally safe to withstand all kinds of hazards and is sustainable after any disaster	
Alternative Livelihood Opportunities	Community has alternative livelihood opportunities (employment opportunities and vocational training)							

Traditional livelihood options	Community practices traditional livelihood options (crop management, artisans, agriculture, fisheries, etc.)							
Economic and financial instruments	Community uses economic and financial instruments (common property, assets, micro-finance, loans, credit, insurance, etc.)							
External Aid	Aid from NGOs or other private agencies for development or after disaster							
5. Environmental / Ecological Indicators	Description of Indicator	Community Response Ratings (1 Lowest and 5 Highest)						Remarks
		Non availability	Availability	Equitable Access	Adequacy	Sustainability	Multi-Hazard Resilience	
		0 (<1)	1	2	3	4	5	

		Facility unavailable or partially available	Facility exists	Facility exists and is accessible to all households during 'normal' times	Facility exists, accessible during 'normal' times and of adequate quality	Facility exists, accessible during 'normal' times, of adequate quality, structurally safe and sustainable after the disaster	Facility exists, accessible during 'normal' times, of adequate quality and is structurally safe to withstand all kinds of hazards and is sustainable after any disaster	
Multi-Hazard Risk and Vulnerability	Level of hazard and vulnerability as indicated by BMPTC Vulnerability Atlas (at the District level)							
Environment Quality Testing and Monitoring	Environmental vulnerability of the community and its surroundings (extent of land and forest degradation, soil erosion, etc.)							
Air Quality Testing and Monitoring	Air quality at the local community level and							

	surroundings							
Water Quality Testing and Monitoring	Water quality and quantity used for drinking water and farming purposes at local community level and surroundings							
Natural Resources Quality Testing and Monitoring	Households get safe drinking water, fuel wood and fodder							
Cooking energy sources	Households use gas or electricity for cooking and do not depend on wood, charcoal, agricultural residues, etc. for cooking and heating water							

