CHAPTER V

COMMUNITY COPING STARTEGY IN CACHAR

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5.1 Sustainable Livelihood Strategy of People Living with Flood and the Need for it :

People's vulnerability and coping capacity to flood and other hazards depend on their livelihood strategy. In the Sustainable Livelihood Framework, a livelihood is defined as the capabilities, assets (both material and social resources) and activities required for a means of living. A livelihood is considered as sustainable when it can cope with and recover from stresses and shocks (e.g. natural disasters, conflicts, epidemics etc.). The framework expresses strengths and capacities of people in terms of their livelihood assets namely Human, Natural, Financial, Social, Physical and Natural Capitals. In the following, the livelihood assets of the people in the study area are described.

5.2 Social Capital for Coping Startegy:

The social capital of the people is judged by many factors including the level of strong social bondage, mutual cooperation among the community people, practice of *Sramdan* system, involvement in collective work such as group farming, etc. Similarly, the existence of strong community level institutions with membership base and practices of local knowledge and skills, practices for the betterments, good networks and connections, and relationship of trust, reciprocity and exchange are other characteristics of social capital. Through careful analysis of the social capital of the area, it was found that some part of the study area is very strong on bondage, mutual cooperation and practice of *sramdan* system and existence of strong community level institutions. In my study area people have good local knowledge and practices for flood management. Strong rituals and customs in relation to flood also encourage people to involve actively in the management of flood. There are no major ethnic disputes in relation to flood management. However, because of the people living with fear and trauma in Sildubi G.P area from flood disaster, the social networks are deteriorating, and social insurance and solidarity that make them cheerful are becomingweaker. This is manifested in the improper distribution of releaf

seriveces specially during the time of flood. To make the situation better, there is a need of organizing counseling to the flood affted people.

It is also observed that the knowledge and information on how the people from Rangirgaht village share their experience to Sildubi village as it far from Block Head Quarters. Flood affected communities of both the villages cope with similar flood related problems and thus social closure, collective action and community safety is visible between both the communities.

5.3 Human Capital:

Human capital of the community can be assessed by skills and knowledge, level of literacy, exposure, awareness, ability to labour, good health, etc.In the study area, people have good skills and knowledge on how to manage the flood effectively. People have different capacities that directly or indirectly support the flood management . However, low level of literacy, poor income source, traditional practice of animal husbandry, poor health facilities in the area, poor knowledge on modified tools and techniques, and inadequate community's emergency fund make their human capital always at risk. The low level of awareness and exposure in Sildubi village as it is far from block head quarters about the new initiatives undertaken by the people from Rangirghat areas make people to continue whatever they know in terms of flood management.

Hence, there is a need of assisting the flood affected most vulnerable people in alternative income generation, increase level of awareness and exposure especially for skill promotion. People shared during the discussion that bicycle repairing, mason, carpentry seem most feasible in the area. For improved animal husbandry, there is a need to open more veterianery centres to cater the needs of the cattles belonging to poor farmers immediately before and after flood. Farmers have to be trained on proper feed management. Health education is urgent need of the both Sildubi and Rangirghat area before, during the post flood situation. It will help to reduce the effects of water borne diseases with the first aid kits support. The capacity building on search and rescue is very crucial for saving lives of people.this training is visible only in

Rangirgaht village as it is close to block head quarter but it is irregular in Sildubi village which is far from block. The emergency fund once collected by the NGO Garib Mazdoor Sangrami Sanstha in Rangirghat village used to provide the rescue, relief and rehabilitation materials to poor farmers and distribute the flood affected people during the emergency situation. In Sildubi NGO name Sildubi Dolphin club provided cooked *Khichadi* to the flood afftected people in the year 2004 and 2007.

5.4 Financial Capital:

Strong financial capital of the community is based on the availability of the good services of financial groups and institutions in terms of resource mobilisation and management in free or minimal guarantee and manage easy loan to the flood affected people. In terms of financial institution in the Rangirghat area, there are 8-10 women self help groups.These institutions promote the saving practices and mobilise the saving fund in credit programs. However, all poor and marginal people are not included in these groups. The mandatory rule of the monthly savings hinders them to be a member of these groups. Only middle income group of people are involved in saving and credit practices. As result, wherever there is a need, poor and marginal people often have to visit the private moneylenders to take loan on higher rate of interest. It is identified during the consultation with local people that providing collateral free credit facilities and agriculture inputs in subsidy rates through the establishment of agriculture cooperatives is effective means. Marginalised sections of the society like the poorest of the poor and scheduled castes in both the villages are financially weak. They need help in terms of providing financial help through micro finance and creation of Self Help Groups(SHGs) to make them available the credit facilities so that they can strengthen their financial capital.

5.5 Natural Capital:

The proper management of natural resources like: water, forest and land and their proper

utilization reflects the level of natural capital. In terms of utilizations of these resources, the study area is poor. In spite of abundance of water resources, people have to rely on monsoon and rain. People use water from the Sonai and Rukni rivers for the purpose of irrigation through their own pumps which is again costly as it is run by diesel.

People from all four villages are also affiliated with Village Disaster Management (**VDMC**) Committees. Though these groups have developed several rules and regulations to protect and manage community from flood, fulfil the basic needs for firewood, fodder and timber and minimise the soil erosion but in practice, the community resources are used haphazardly and the rules of VDMC have not worked properly. Particularly in Menipur and Rangirghat Part III, the land management is also poor. The continuous encroachments along the riverbank and towards the forest area make the situation further vulnerable. The sand from the Sonai river are continuously being extracted despite several efforts to control. In order to optimize these resources, there is need of permanent evacuation centre to save the land resources. The temporary shelters/ camps in the Rangirghat area created negative impact as it is of no use and no one take care for its maintenance. For this, plantation of *kher* (hay) and a kind of grass grown along the river bank are more beneficial as expressed by local people. fast growing fodder including bamboo in private land is other schemes to reduce the effects of flood and generate additional income to the villagers of Rangirghat GP. Promotions of flood friendly agricultural practices are equally important to mitigate floods and to reduce risk. Hence, it is necessary to adopt agricultural coping measures which includes selection of appropriate variety of paddy and other crops, depending on the timing and water level as well as type of soil.

5.6 Physical Capital:

The availability of the physical infrastructures and their effectiveness determine the position of physical capital. It includes roads, irrigation related infrastructures and flood control measures, etc. In the study area, the road network is inadequate and poor. The drainage system of the road network is very poor. The culverts are not functioning well and the main road to Rangirghat village road itself has created

additional inundation problem. The absence of bridge in the tributaries of Sonai River has made people isolated from external support and more vulnerable particularly during the monsoon.

Initiatives undertaken for the disaster management training and other flood protection measures. The facility of boat is available in few locations to cross the Sonai River which is sometimes risky. During past years, there were many instances of boats drowne in the Sonai River but no casualty happened as all people were male and were knowing swimming. In terms of irrigation and flood control related infrastructures, the area is poor. Considering the severity of the river bank erosion and sedimentation, the existing infrastructures seems inadequate. A decade long embankment conflict also discouraged development organisation for the investments in these sectors. In order to improve the physical capital, first, there is a need to support boats to the community in group approach. Boats are the only means to cross the rivers as there is absence of bridge facilities in the tributaries of Sonai river. Due to lack small bridges and culverts the response and rahibilitation work is affected in both the villages, as such there there is need to construct more culverts and bridges to have better communication among the community people to have effective flood management.

It is equally necessary to periodically remove soil deposited inside the hume pipe because soil often blocks the water. It is necessary to raise the height of village road with sufficient hume pipes for proper drainage. Third, the feasible and cost effective flood resistant housing options for the poor would be essential by analyzing the flood trends of

techniques are to be adopted according to the risk posed by floods. Houses can be built on raised lands both in Sildubi and Rangirghat villages or earthen platforms so water cannot reach the plinth in normal floods. Fourth, the heights of majority of hand pumps and ring wells are low so that they get submerged during flood. Hence it is necessary to raise their height. Construction of raised toilets is also necessary in flood inundated areas.

5.7 Political Capital:

The extent of mutual cooperation among the political parties and groups for the internal and external resource mobilisation and management for flood control determine the level of political capital of the area. In terms of cooperation, all major political parties were found united and have single voice for the flood related issues. They made many positive announcement but the level of enforcement is very poor. There is no political culture to generate the external resources to work on flood management. Though all parties are united, there are still some internal issues among them that hinder the proper mobilisation of the external resources. There is a need of making issue based action plan with clear division of roles and responsibilities among the parties to pressurise the duty bearers in securing the external resources to support in flood management. The resources available in the Block Office, Sonai Development Block should also be used part of flood management in all the villages of block rather than concentrating to the villages close to block head quarters. There is a need of technical assessment for the extent of flooding caused by Embankment and take steps in the mutual cooperation of both communities and technical expertsm of Water Resources Department.

5.8 Demographic Profile of the Studied villages:

Assam is one of the oldest and largest north eastern states in respect of geographical area and population compared to the other six states of the North East. It is surrounded by Bhutan and Arunachal Pradesh in the North, Meghalaya and Manipur in the South, Nagaland and Arunachal Pradesh in the East and West Bengal in the west. The total geographical area of the state is 78,438 sq. km. The state comprises of two river valleys namely Brahmaputra and Barak. Brahmaputra is one of the largest rivers in the world. It divides the state into south and north. Brahmaputra in the north bank has as many as 26 tributories while in the south, it has 12 tributories. Barak the second largest river in the north eastern region, has 7 tributories in the north and 3 tributories in the south. The two villages selected for this study lie in Cachar district, which covers an area of 3,786 sq. km., out of 22,244 sq. km. in the Barak valley The four villages are (i) Sildubi and Menipur under Sildubi Gram panchayat and (ii)

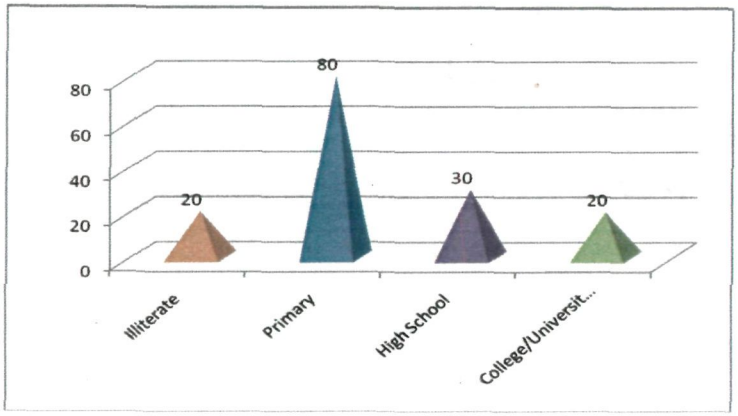
Rangirghat Part I and III under Rangirghat Gram Panchayat. These villages comes under Sonai block which is about 26 km. away from Silchar and about 380 km. from Guwahati. The villages under Sildubi Gram Panchayat is located at a distance of 0.5 km. from the panchayat office, 13 km. from block headquarter (Sonai), 14 km. from the district headquarter (Silchar). The Villages under Rangirghat Gram Panchayat 0.5 km. away from the panchayat office, 1 km. from block headquarter, 19 km. from district headquarter. The prominent rivers causing flood in both the villages are **Sonai, Rukni and Amjor**. Both the villages are surrounded by river Amjor, a tributary of river Sonai which in turn is a tributary of river Barak, the main river of the district. Flood in the area is mainly due to overbank spilling of huge quantity of river water from upstream Bhutan hills as well as from the adjacent state of Mizoram. Nearly 90 per cent of the area of Rangirghat Gram Panchayat is in the flood plain of river Amjor and for villages under Sildubi Gram Panchayat, it is 50-70 per cent.

The villages in the study area falls under the Sonai Development Block of Cachar District. The Block Head Quarters again comes under the Sonai Revenue Circle and this circle is known to be as one of the wrost flood afftected circle of Cachar District. Major parts of the geographical area of Rangirghat and Sildubi Gram Panchayat are flood affected but few parts of its geographical area have high land which the community people use them as temporary shelter during the time of flood.

All the villages are surrounded by river Amjor, a tributary of river Sonai which in turn is a tributary of river Barak, the main river of the district. Flood in the area is mainly due to overbank spilling of huge quantity of river water from upstream Bhutan hills as well as from the adjacent state of Mizoram and Manipur. Under Sildubi G.P Menipur village have total population of 2500, Sildubi,3000. Whereas under Rangirghat G.P Rangirghat Part-I have 3600 and Rangirghat Part-III have 3500 population. The villages are composed people from different castes. The population is grouped under two religions; the Hindus and the Muslims. Hindus population is further grouped under caste systems. Muslim population is again divided on the basis their occupation such fishermen or *Maimal* community. The *Maimal* community is mainly engaged in fishing whereas other are engaged in cultivation of paddy and other agriculture activities. Among Hindu and Muslim families agriculture is the main source of livelihood in both the villages.

5.9 Existing Educational Facilities:

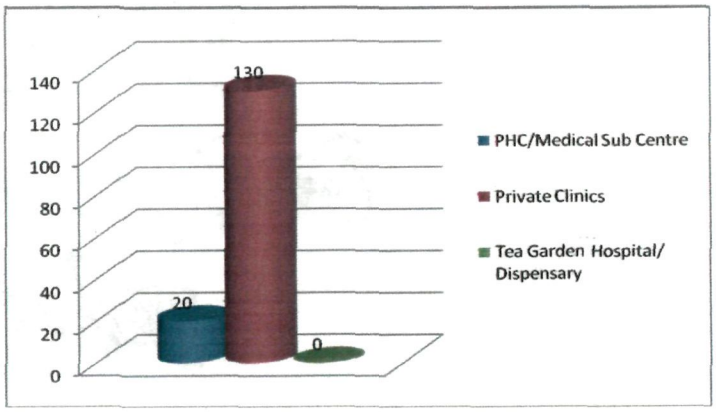
Chart no: 5.1.1



In study area the primary schools are more in numbers and the buildings of the schools are often used as relief camps as people take temporary shelter.Other educational facilities like high Schools and colleges are very less in number.This shows that people lack higher education and thus they lack knowledge about Government policies and programmes for flood management which are available for dealing with floods in pre, during and post flood like situation.

5.10 Health Facilities Available in the Study Area:

Chart no: 5.1.2

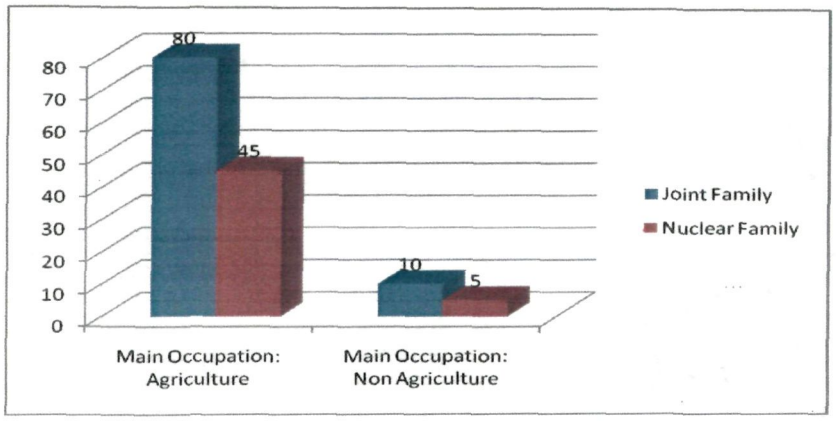


People in study area are found to be totally dependent on PHC for their health problems and they avail the facilities from the PHC,however the private clinics are

also available which provides health services to the flood affected people.The private clinics are mainly attended by well to do families.

5.11 Family Composition and Main Occupation:

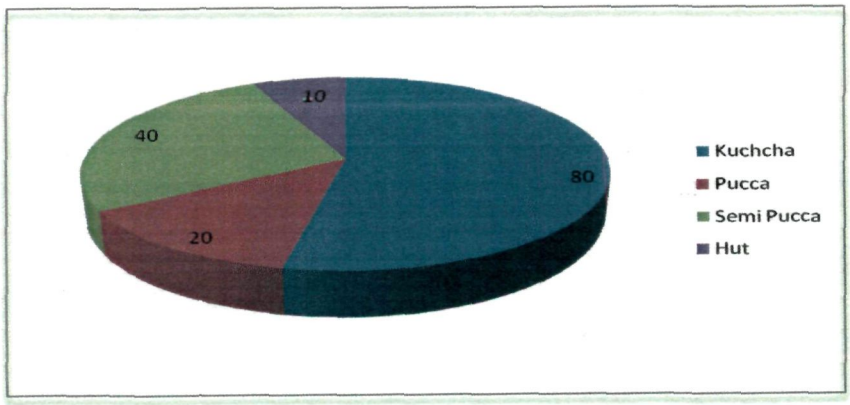
Chart no: 5.1.3



The families are mainly joint family and their main occupation is agriculture. Some are serving in Government job or private jobs focus less attention to agriculture and prefer to live in nuclear families.

5.12 Type and Condition of Houses:

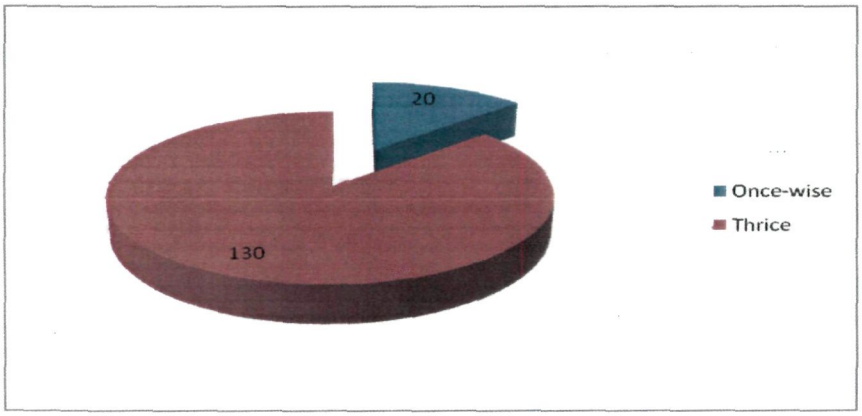
Chart no: 5.1.4



The housing condition of the households affects the range of flood damage, in the study area the majority of the houses are hut, kuchcha or semi-pucca in nature and thus it reflect that the socio-economic backgroung of the families are poor and thus they are more prone to flood damage.

5.13 Feequency of Flood Affects on the Households:

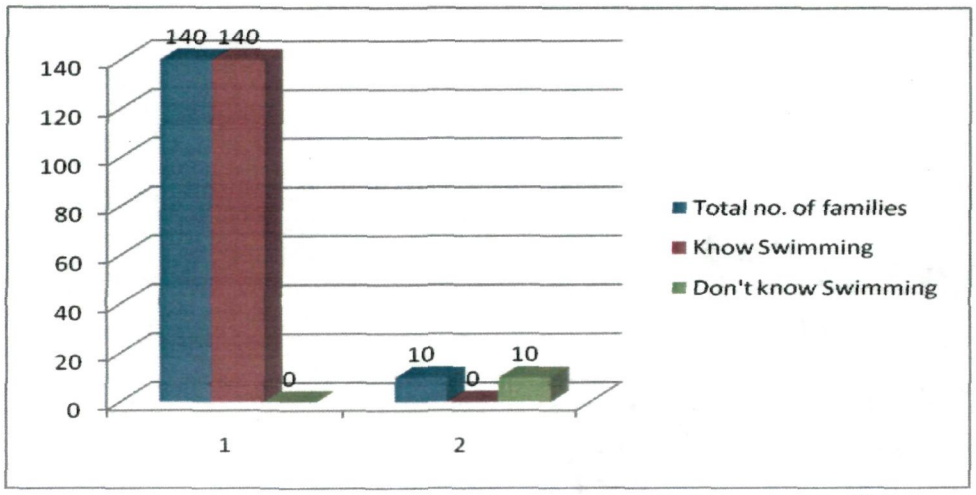
Chart no: 5.1.5



When the water level rises above risk or danger level, the families whose houses are located completely low lying take shelter in schools and neighboring houses. Those who have tents and plastic sheets also move towards safer places. Livestock are also kept on the uplands. Those households who have permanent buildings stayed in the first floor and kept their cattle in the upland areas. According to the figures received in the community that 130, out of 150 households are affected by three waves of floods every year. It is clear from the above that each village is prone for the floods every year.

5.14 Knowledge About Swimming:

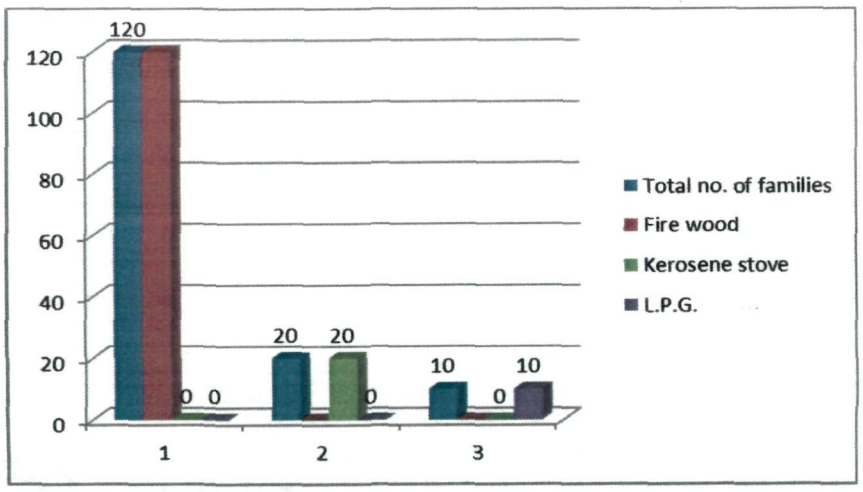
Chart no: 5.1.6



It was found that 140 out of 150 households know swimimg and only 10 families have no idea or least idea about swimming. This reflects their level of preparedness and thus the casualty number due to floods are negligible.

5.15 Type of Cooking Method Used:

Chart no: 5.1.7

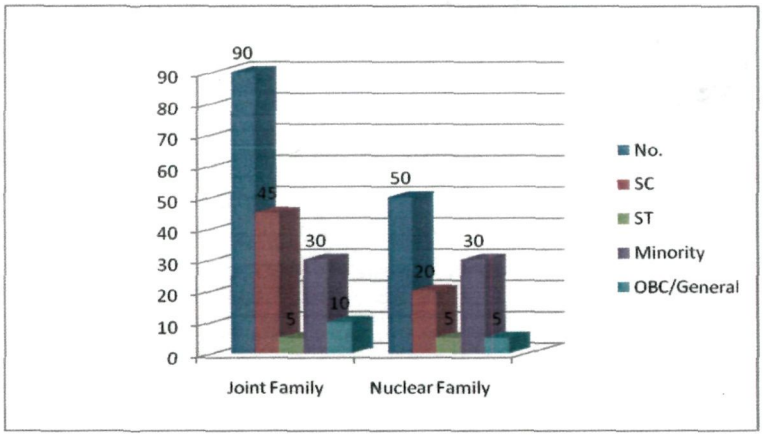


The community people of both Rangirghat and Sildubi were fully aware that flood has devastating after effects and could hamper the whole community at any time. During

flood, most of the households are compelled to manage individually as and when needed. The community as per their own traditional judgment move away to seek safe places like schools, roads, and other embankments and they mainly use fire wood for cooking whereas some also uses kerosene stove. However, use of LPG stove is very negligible.

5.16 Caste Composition:

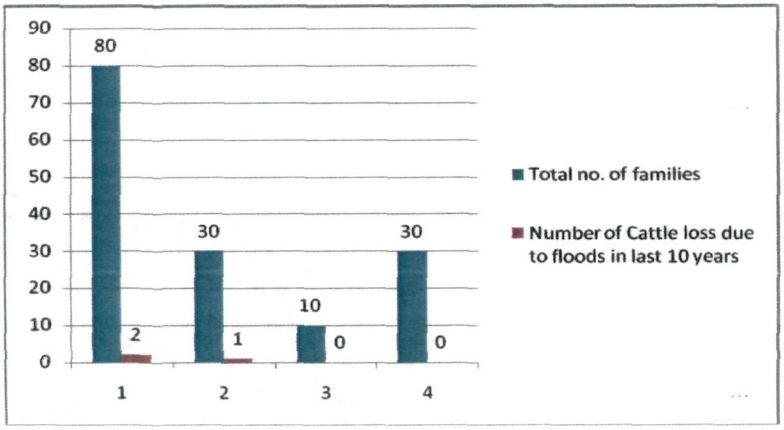
Chart no: 5.1.8



Caste Composition of the study area are found to be a mixed community.

5.17 Loss of Cattle:

Chart no: 5.1.9



It was informed that there are no collective coping practices in the community for the cattles. The severity of flood was observed by the community only after the construction of embankments and its breach. There was no preplanned coping mechanism in both Sildubi and Rangirghat villages. However, in both the villages most of the community members were aware of the frequency of flood and mentally prepared in coping with it on an individual basis. It was revealed that most of the households in Rangirghat have the practice of keeping their cattles in high lands but there were few incidence of cattle loss in last ten years which is highlighted in chart. If the flood happens to come during the night, people set their cattle free and run with their children to a safer place. The cattle are then collected next day in the morning.

5.18 Income Pattern of the Households and CBFM in the Study Area:

Table no: 5.2.1

Income source	No. of House Hold	Average duration(in months)	Average income per HH
Agriculture labour	35	6.4	24836
Non-agriculture labour	30	6.9	27170
Service	14	10.2	45500
Business	13	10.3	57602
Rickshaw/Thella Puller	20	8.7	34391
Truck/Bus driver	12	9.2	62222
Contractorship/ Tkikadari	09	10.0	77455
Renting of rickshaw, boat etc	14	6.6	23474
Beginning	03	9.1	8347

5.19 Household Income from Various Sources:

Table no: 5.2.2

Sources of Income	No. of HH engaged in production	No. of seller HHs	Average income (in Rs)
Crops, vegetables & fruits	130	70	2000
Paddy	80	20	5000
Egg & Milk	90	70	4000
Fish farming & fishing	110	100	10000
Poultry & livestock	100	70	1500
Labour rent/Job(private/Govt.), trade	50		20000

5.20 Level of Poverty:

Table no: 5.2.3

Characteristics	% of HHs below poverty line(BPL)	% of HHs above poverty line(APL)
Landholdings (total land)		
None	22.02	43.47
01-05 Bighas	21.19	38.35
05-10 Bighas	19.54	42.24
10-15 Bighas	16.22	39.92
15 and More Bighas	12.82	29.23
Occupation of Household Head		
Agriculture (owner)	16.11	34.83
Business	15.55	39.93
Fisherman	14.33	37.06
Agri-Labourer	15.39	43.79
Non-agre labourer	22.28	44.38
Job/Service	23.44	48.80
Others	20.77	38.17
Education of the Household Head		
No education	16.80	39.19
1-3 years of schooling	18.04	39.77
4-5 years of schooling	14.07	36.77
6+ years of schooling	20.14	38.86
Family Size		
1-3	8.89	25.70
4-6	18.10	42.57
7 & above	24.93	46.39
Housing Condition		
Straw roof and bamboo/muddy wall	16.41	41.69
Tin shed roof and muddy wall	18.37	42.88
Tin shed roof and tin wall	16.02	37.26
Semi-puccaand Pucca	19.57	38.09
NGO Membership		
Yes	22.54	40.74
No	17.86	40.18

The communities of my study area are Sildubi and Rangirghat Gram panchayat. The Rangirgaht G.P is close to Block Head Quarters i.e Sonai Development Block and Sildubi G.P. is far from Block Head Quarters. The people of both the communities are from lower socio-economic background and mainly dependent on agriculture for their livelihood. The family size in these communities are big and thus come under category of below poverty line. The farmers with more than 15 *bighas* are above the poverty line and with less than 5 *bighas* are mainly very poor and their lands are mainly flood affected. The people of both the communities are from lower socio-economic background and mainly dependent on agriculture for their livelihood. The family size in these communities are big and thus come under category of below poverty line. The farmers with more than 15 *bighas* are above the poverty line and with less than 5 *bighas* are mainly very poor and their lands are mainly flood affected. The level of education affects then in dealing with flood in pre, during and after flood conditions as they hesitate to adopt flood warning techniques. As such people don't believe in flood forecast and they develop wrong prediction of flood and sometimes become panicky and don't cultivate their land in panic of flood and as such their economic condition gets deteriorated. But early warning techniques are very good and they use local mikes placed in mosques and temples for flood warning and thus human casualty is almost nil in these communities. Major study findings are outlined in following paragraphs with regards to the people's coping strategies with regards to their food and livelihood.

The geography of the village rugged with over three –fourth area comes under low lying area susceptible to floods.

5.21 Community Coping Strartegy in Cachar:

Community coping strategy is defined as innovative ideas indegenouse developed to minimize the severe affects of flood. This chapter hereby presents the findings of the study done with the help of various tools of data collection conducted in Sildubi & Rangirghat Gram Panchyayat areas of Cachar District. The study conducted during the study period was mainly on Community Approaches to Flood Management, where the focus was on the following: (i) how communities themselves can collectively

manage various phases of floods through preparedness, during and post-flood reconstruction and rehabilitation; (ii) how community based institutions can facilitate flood management activities; and (iii) how post-flood economic recovery can be streamlined through adoption of appropriate agricultural technologies. Following are the summery of community based flood preparedness initiatives of Sildubi and Rangirghat Gram Panchayat.

1. People temporarily shift to high lands, public places, schools, embankments, etc during floods.

2. The communities have no collective pre-coping mechanism. All the activities are done on individual basis.

3. Proper coordination is lacking among the agencies involved. The external support provided to the affected communities is inadequate and inequitable.

4. Due to heavy sediment load in the river, the bed level is rising every year causing more threat of flooding in the future.

5. There is no permanent flood management committee in the communities. However, they form an ad-hoc committee when river training works with support from the government agencies are to be constructed.

6. Strong confidence for self-help is demonstrated by the communities, but scarcity of funds remains a major constrain.

5.22 Sildubi GP Study Area:

The Sildubi GP is remote to to Sonai Block Headquarter. The people of this have their own coping mechanisdms interms of taking shelter during flood, food storage, livelihood framework etc. the Government support are less in this area as compare to Rangirghat G.P. Some of the findings intermc of community coping mechnisma are as follows:

1. There is no flood warning system and people predict flood by watching the clouds and the rain.

2. Some of the households in maimal community (fishermen) have individual pre-coping practices such as storing food, keeping plastic sheets and tents etc. But there is no such practice is visible among other communities of the area.

3. Proper engineering design of river training works are not being undertaken is in Sildubi GP Study Area

4. The communities in Tea- garden and Bengali Hindu entrust the elders for flood forecast who listen to the weather report from radio broadcasts and watch flood events for the purpose.

5. Although the Government is about to complete embankments to stop water spilling over the tributaries of Sonai river, the threat of flood damage will remain the same.

6. Growing urbanization and network of roads and infrastructure are increasing the drainage congestion and the depth and duration of inundation are also on the increase.

7. The Red Cross and DDMA has made some efforts to mobilize the youths of VDMC amd train them in disaster management techniques.

5.23 Rangirghat GP Study Area:

The Rangirghat Gram Pranchayat is close to Sonai Block Headquarter. The people people of this have their own coping mechanisdms interms of taking shelter during flood, food storage, livelihood framework etc. the Government support are more in this area as compare to Sildubi G.P. Some of the findings intermc of community coping mechnisms are as follows:

1. Households in maimal community have individual pre-coping practices such as storing food, keeping plastic sheets and tents etc.

2. Proper engineering design of river training works being undertaken is lacking in Rangirghat GP Study Area

3. Although the Government is about to complete embankments to stop water spilling over the banks of Sonai & Rukni river, the threat of flood damage will remain the same.

4. Growing urbanization and network of roads and infrastructure are increasing the drainage congestion and the depth and duration of inundation are also on the increase.

5.24 Rangirghat and Sildubi Gram Panchayats: Key Aspects of Community Coping Mechanisms:

The key aspects of CBFM in Silbubi and Rangirghat G.P of Cachar District are as follows:

1. People temporarily shift to high lands, public places, schools, embankments, etc during floods.

2. The communities have no collective pre-coping mechanism. All the activities are done on individual basis.

3. Proper coordination is lacking among the agencies involved. The external support provided to the affected communities is inadequate and inequitable.

4. Due to heavy sediment load in the river, the bed level is rising every year causing more threat of flooding in the future.

5. Proper engineering design of river training works is lacking.

6. There is no permanent flood management committee in the communities. However, they form an ad-hoc district disaster management committee (DDMC) when initiative are taken by GP Secretary and local NGO with support from the government.

7. Strong confidence in self-help is demonstrated by the communities, but scarcity of fund remains a major constraint.

5.25 Flood Management in the Study Area:

People in the study area demonstrated some knowledge and skills for flood preparedness and management during and after flood. The flood management practices adopted by the community as shared by them during the field study and as observed at the real ground shows that people have good understanding and knowledge about flood and its nature. They are familiar with the possible damage and destruction. The flood management practices of the community in the study area as grouped into three categories namely flood management before, during and after the flood are reported below.

5.26 Pre- Flood Situation:

The community has no organized institution for flood fighting and the above-mentioned flood-response-strategy is practiced on individual basis, not in the collective form.

5.27 Forecasting of Flood:

Forecasting of flood and accordingly issuing warning to the people in the community can save many lives and properties. Having an effective warning system is difficult and needs a lot of resources which Assam has not been able to afford so far. Therefore, people adopt to the following ways and means of forecasting system. Following are some of the examples of local methods of flood forecasting which people rely upon a lot. Radio and TV broadcasts in the research area provide weather data such as rainfall and temperature usually at the end of each of the news bulletins. TV broadcasts from All India (AIR) India received in Sonai Development Block by local radia news which is still very popular in the research area. All these information may be very useful in forecasting floods. Therefore, during monsoon season, people listen to or watch these news broadcasts regularly. Assigning some persons to observe hydrological events in the catchment and water levels. Observing clouds in the upper catchments, changes in the water flow, e.g., rising levels of water surface, river water

mixed with mud, leaves floating on the water, increasing number of fishes in the river may provide enough clue for issuing flood warning. Unusual sound/smell of rivers (e.g., rumbling sounds coming from the river, muddy smell of the stream) may also be read as nature's warming. Continued rainfall in the surrounding areas or in the upper catchments of the stream, monitoring such rainfall through public radio transmission often provide clues for likely flood event. In addition to the above stated means of communication, the people also have their own ways of assessing the flood forecasting as follows:

a) **Unusual sounds from rivers:** Community people assess the strange sound (rumbling sounds) from the Sonai, Rukni and other small rivers. They identify the sound of heavy flood upstream, based on their prior experiences. Once confirmed that there is a flood upstream, there is a general practice of shouting in loud voice to notify other people. Accordingly, people decide either to stay inside the house taking some precautions, or to go to safer places for staying.

b) **Muddy smell of the water of the river**: Muddy smell in the water is considered as another indicator of the flood. Generally big flood carry fresh soil/mud along with water and its smell is different than the normal flood. According to the local people, colour of river water is also another indicator of flood.

c) **Presence of dry leaves, mud and other materials in river water:** When the water level increases, flood carries dry leaves, mud and other materials along the river course. These are taken as an indication of increasing water level. It is also reported that if number of fishes in rivers suddenly starts increasing, then this is considered as an indication of possible flooding in the immediate future. If there is a big flood coming nearby, dead bodies of animal and snake can be seen flowing at the surface of the water.

5.28 Management of Basic Materials in Advance:

It was observed that wherever possible, people tried to manage basic materials that are needed during the flood situation at their house. It is found that people keep plastic

sheets, tents, ropes, rubber tubes, empty drums, torchlight, etc. especially during monsoon in *aatiya.* At the same time, those unable to manage the materials in advance adopt 'wait and see' strategy. As a result, the people of latter groups are found more vulnerable during the flood because of the poor preparedness.

5.29 Psychological Preparedness for Flood:

It was found that majority of people take the events of flood as a part of life. They are aware of the possible magnitude and frequency of flood and its possible destruction. Thus, they are mentally prepared to face and struggle with the possible flood disaster and prepare accordingly at individual and family level. People express that living with the flood should be the lasting alternative in the absence of support from external agencies.

5.30 Protection Against Cough and Cold:

During the flooding period, children mostly suffer from many diseases, cough and cold being the major one. People are found sensitive to save the life of children from cough and cold. People use local spices such as *marich* and *kala jira* in the food and take *tulasi tea* to prevent cough and cold. They also collect *neem* as they use leaves of *neem* during the fever and to treat the skin disease.

5.31 Use of Home Remedy to Treat Livestock:

A number of *gharelu* (domestic) treatment practices for livestock are common in the study area as people cannot afford for western medicines and do not have access to the services of veterinary technicians particularly during floods. It was shared that people usually make use of lemon juice for livestock Garlic is widely used during the stomach problem of livestock. Therefore, before the floods, communities ensure that these home remedies are available.

5.32 Creation of Drainage Outlet in Each Plot of Land:

Poor drainage system compounds the flooding and inundation problem in the study area. In order to protect paddy land from the possible flood, people try to make *nala* (drainage outlet) in each plot of land. This is very common practice in the flood affected area.

5.33 Storage of the Valuable Materials in Polythene Sheets:

People usually keep the important documents and utensils in the safe places either in their own house or in safer houses of close neighbours or kins. People living in the low lying flood prone areas who have thatched houses. The upstairs used to storage materials in order to save from flood. And have no close neighbours with *pukka* house cannot usually save their documents and the assets.

5.34 Preparation of the Palang of Bigger Height:

Palang made from *pat* rope, bamboo, wood at bigger height is very common in the study area. Due to risk of snakebite, every family member tries to sleep on *palang*. As the number of injuries/death with snakebites, insect bites after flooding is on rise, people have started to make *palang* of bigger height. *Palang* are especially useful to keep the children outside the house during flood if the flood level inside the house is high. For instance, people prefer to stay in Palangs at big height even if flood water entered their houses and keeping their children on it throughout the night.

5.35 Weaving *Dori*,fishing Net:

Some settlements in the study area weave *dori* (a large sized basket made of bamboo) in advance for fishing during the flood. It is a common practice of fisshing during flood and keeping the surplus fish after drying in hanging position or in a big bamboo

basket coated with mud on the safer places. Usually people try to sell dry fish during and after the flood season.

5.36 Storage of Grains and Dry Foods:

Many people in the community store some of their food grain on the first floor of those having multistory and permanent building. Some have built small temporary sheds in elevated places from which they can watch the crops against birds which is also used for taking refuge during flood. Some people have made wooden benches on which they stay above water while the inundation goes on beneath the benches. Some people have made provision of plastic for use during flood. Many people keep provision of dried and precooked food for about two days. This includes beaten rice and noodles. The plinths of permanent houses are kept high above the ground. Most of the affluent people in the flood-prone areas arrange for the temporary migration of their children, pregnant woman, old and sick people to their relatives' houses in the flood-free areas.

When floods are in the offing, people take precautionary measures with a view to reduce their losses and sufferings. They store in advance essential items such as foodgrains, fuels etc. for about 2 to 3 weeks (probable duration of flood). Early harvesting of crops is another measure. Farmers keep seeds in tin containers in flood free zones either in baskets hanging from the ceiling in their houses or keep them with friends/relatives in flood free areas. Cattle owners preserve dry fodder which can be used in place of green fodder during flood. Households having friends/relatives nearby, arrange to shift calves and ailing cattle to such places. However, this practice is not very common. Side by side, villagers erect raised platforms (*Machan*) made up of bamboo, wood sticks etc. inside their houses for the use of women, children and the aged. Some keep one bed or one piece of furniture over the other to raise height of the living place. For safe transport during flood, floating platforms (*Bhur/ Bhunga*) made up of banana stemp, bamboo sticks etc. are used by some households. These platforms also help them in catching fish. But all these attempts are based only on individual initiatives. During flood, people generally forget personal animosities and help each other to the extent they can.

There is a general practice of milling sufficient grain in advance for monsoon season. People usually prepare and keep dry food and vegetables such as beaten rice, salt, sugar, *bheli*, noodles, gundruk (dried green leafy vegetables), potato chips, pulses etc. Besides, people also prepare dry food of *satuwa (roasted and powdered gram)*, *bhuja(made from rice),* biscuits, especially for their kids. Sidra (dry pickles, titaura (dried daal and mustard) and dried pumpkin are also prepared for the monsoon period.

5.37 Preparation of Informal Self Plan for Evacuation:

During peak monsoon, evacuation in the safer place is common. People prepare informal plan in advance for possible evacuation to safer areas. For example, the people of Rangirghat and Sildubi Gram Panchayat used to go to *tillas* (comparatively on higher elevation) because of safety.

5.38 Arrangement of Evacuation Place and Plan:

Before monsoon, people within the community discuss for evacuation plan and management of evacuation places. The plan consists of renovation of possible evacuation centres and administrative arrangement with school management committee to close the school for some days among others.

5.39 Management of Livestock in Advance:

People take their livestock to safer places if they perceive that flooding problem will become severe. It is, however, very difficult to evacuate livestock before evacuating people due to security reasons. People of *Rangirghat* use to take their livestock to *Block Office tilla* a place relatively safer from flood.

5.40 Making of Temporary *Kher Feni* at Bigger Height :

In the study area, people use to construct temporary *kher feni* to place the *hay* for storing dry grass and feed of livestock.it is prepared above the flood level and with bamboo machan.

5.41 Procurement of Essential Drugs in Advance:

It was learnt that people usually drink contaminated water, eat dead fishes and contaminated food as they are forced by the situation during flood. As the surrounding is also contaminated due to dead animals, the quality of water becomes worse. As a result, common cough and cold, water borne diseases, fever, skin disease, and worm infestation are very common in the villages during floods. As a precautionary measure, some people procure essential drugs like Paracetamol, Analgesic, ORS, etc in advance.

5.42 Management of Firewood:

In the study area, especially in the northern village, there is no problem of firewood due to proximity of forest area. People in the southern village use cow dung apart from firewood. Usually, people manage sufficient quantity of firewood and cow dung for monsoon period as it is very difficult to manage firewood during the flooding season. In order to store the firewood and cow dung safely, they make *aatiya* and *taad.*

5.43 Storage of Dry Foodder for Livestock:

Livestock grazing during monsoon is not possible in flooded and inundated areas in majority of the villages. In order to cope with the situation, people usually store the straw, *kher/ puar* (hay), dry grass and chopped grass in advance. They also store bran to feed their livestock during flooding.

5.44 Making of A Kind of Cooking Stand Made up of Mud:

During flood, it is very difficult to cook food due to wet surrounding which makes it difficult to burn firewood. For handling such situation, people make in advance to keep stoves or other traditional cooking stoves on it and they also prepared a kind of cooking stand made up of mud.

5.45 Homestead Raising:

In order to be safe from the flood, there is an increasing trend of homestead raising before the construction of house over it. People prefer to raise homestead with stone machinery.

5.46 Raising the Height of Hand Pumps:

With scarcity of water during flooding period and contamination of water due to open defecation, height of the newly installed hand pumps are being raised by the people.

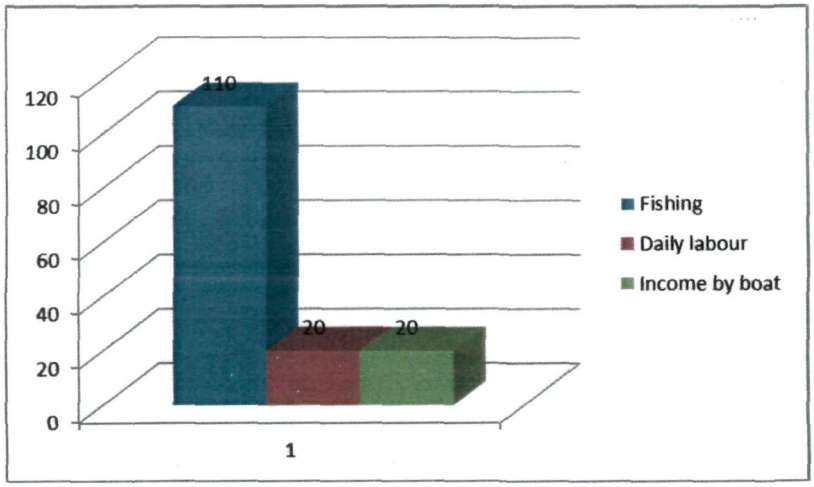
5.47 During Flood Situation:

People in the two locations of the study area seem to have their own system of flood warning being practiced over years. In the research area, where flood is expected from Barak river and its tributries river, some of the experienced people in the community never miss a radio-report on weather to know the monsoon-conditions at flood affected affected areas. They also keep watching the sky to assess whether it is raining heavily or not. If the rainfall in Cachar District is more than 80 mm any day, they remain alert and get ready to evacuate in order to shift to safe places. They have experienced that 12 hours time is taken by the rainwater to traverse the distance from hilly catchments area of Mizoram to their localities; flooding begins in Sonai in about 12 hours, and in about 18 hours, the flood inundates their residential areas. In general, the flood warning is disseminated through person to person communication. In case of

Distrct Headquarters at Silcahr, a rain gauge station is established at Water Resources Department Office which is about 15-20 kms. away from Sonai Development Block. In case of heavy rain in Mizoram and its hilly area, the person reading the rain gauge conveys the message through telephone to the Red Cross Office at Silchar. The Red Cross Office at Silcahar in turn transfers the message to BDMC preferably by telephone. If the telephone is out of order, it uses other means such as using wireless network of Police by DCs office or sending some one on a bicycle carrying the message. When water level starts rising in the residential area they start to shift their livestock to uplands like embankments and higher roads. This is based primarily on previous experience and direction of the elders. Thereafter, the people shift themselves and also help the neighbors. They take refuge in neighboring permanent houses, public houses and places on high lands. During a flood situation, there is no practice for flood coping in organized ways; there is no mechanism either. In some particular cases the people seem to help their neighbors in the rescue operation during flood situation.

5.48 Source of Income During Flood:

Chart no: 5.1.10



The sources of income during flood varies from community to community. The fisherman community people are mainly engaged in fishing and they keep the unsold surplus fish for future use. They dry these fish and keep it in air tight busket and sell it

with high rate which we call it dry fish or sutki. Thus they take advantage of flooding. Some are found to engaged in daily labour. The people who have boats are found to engaged in taking the flood victim passenger from one place to another.

5.49 Keeping of Valuable Goods Safely:

Those who still keep the valuable goods at home try to keep them carefully so that those will not be damaged by flood. Those goods are generally kept at safer place or in the neighbour's houses which are safer.

5.50 Evacuating Pregnant Women:

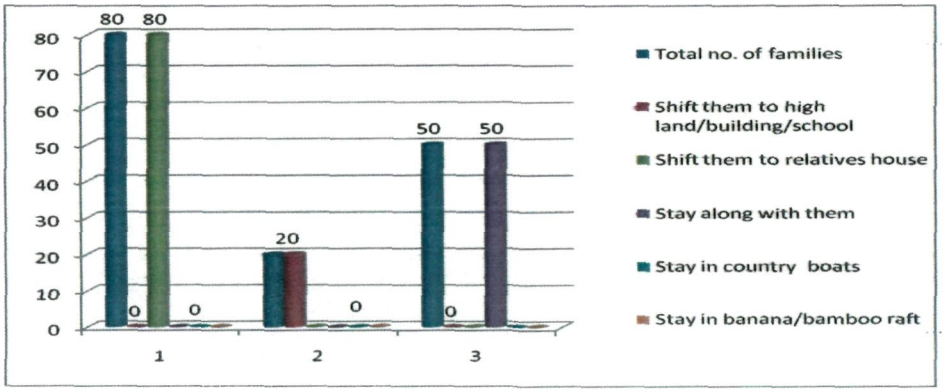
When people start evacuation during flood, they were reported to give priority to pregnant women. People shared that pregnant women suffered a lot during the floods.

5.51 Caring of Children and Elderly with Priority:

The primary task during this phase is to care the children and elderly first as they are the first victims from the flood. Kids are kept in upper stirey building if it available.

5.52 Special Arrangement used for Elderly /Handicapped/Children:

Chart no. 5.1.11



The person who are known to be more vulnerable to floods are elderly, handicapped and children. The majority of them stay along with their family or stay in the country boat in case if it is available with the family. Few are shifted to high land, building and school.

5.53 Making of Double *Palang* with Increased Height:

In order to raise the height of the *Palang*, there is a practice of stacking one *Palang* over another. People keep children, elderly people and pregnant women on them. Sometimes, Palang is also used to keep the grains.

5.54 Monitoring Flood During Night:

Many communities are found to monitor flood during night time. For this purpose, usually youths from the same *basti* (neighbourhood) are assigned on a rotational basis.

5.55 Using Rescue and Relief Materials:

People shared that some of them use vehicle tubes and family fishing boats for rescue purpose. As people perceive that floodwater level has reached the danger level, those having such rescue and relief materials start using them.

5.56 Mobilisation of Youths:

Role of youths (particularly school students) is very important during evacuation of the people towards comparatively safer place. Schools are closed for some days and youths are involved in rescuing people affected from the flood. The rescue and relief activities include carrying people towards the safer places, management of valuable goods arrangement of food, and treatment of people.

5.57 Informing Red Cross and other Stakeholders:

Local volunteers inform relevant stakeholders about the situation of flood through mobile phone and seek immediate relief materials. The Red Cross and security personnel are first notified than other stakeholders including District Administration Office.

5.58 Taking Shelter at Appropriate Place:

Families whose houses are completely damaged or destroyed take shelter at school, health post and neighbouring houses. Those few have multistoried housed take shelter in upper floors.

5.59 Using of Tents and Plastics to Stay:

At the initial stage when flood has just started, those having tents and plastic sheets start using them. But as the flood water level increases further, they also move towards the safer places.

5.60 Managing Livestock:

Generally livestock are kept at uplands to protect them from the flood. In the extreme condition, livestock are freed from rope so that they can swim and go to safer places on their own. In high flood situation, management of livestock may not be a priority for people.

5.61 Filling Sand Bags to Divert the Flood:

During floods, on the basis of their proven knowledge, experiences and practices, people sometimes try to divert flood from their area. It is done by excavating new canal and constructing dykes of sandbags.

5.62 Post Flood Situation:

A majority of villagers in both the selected villages of Assam live in high flood risk areas. The risk is more during major floods that occur periodically. However, mild floods of manageable nature do not provide that much of a threat. Since these occur more frequently, people have learnt to survive through experience. Apart from the risk of drowning, villagers were also concerned with the risks on account of water borne diseases like cholera, food poisoning, dehydration, diarrhea, high fever, snake/scorpion bites etc. Students pursuing studies face the risk of disruption of their classes and academic sessions. Risk management exercise, however, is entirely individualistic. Some of the measures taken by people after the flood are as follows:

5.63 Informal Damage Assessment: When they return home once the flood is out of risk level, they assess the damage caused by flood informally so that immediate plan could be made for action on the priority basis. The damage assessment is also done to receive relief materials from government and for preparedness for next year flood.

5.64 Drying of Wet Seed, Grains and Clothes: Sun drying of wet seed, grains and clothes is one of the main tasks people perform after the flood. Elderly and women are mostly involved to separate good grains from the damaged ones.

5.65 Construction/Repairing of Houses:

Not all houses are damaged by the flood. The extent of damage depends on the magnitude of flood, condition of houses and physical set up of the villages. The partially damaged houses are repaired and made liveable. People with completely collapsed houses, collect construction materials like bamboo, rope, hay and wood from nearby forest. The role of CFUG is important for providing such materials. Community often show solidarity and cooperation during such disaster events. People stay in their neighbour's or kin's home for some time until the house is ready to live. Some community leaders also provide assistance to the affected families during this period.

5.66 Management of Food and Clothes:

If stored grain is damaged by food, people seek grain from others on credit. Taking loan from private moneylender is common during these days for purchasing food for survival. In most of the conditions, to manage warm clothes for family members and to procure additional food to eat people take loan or get support of big landowners in exchange of providing their services during cultivation and sending their kids as domestic helps in future. People also receive relief materials from various relief and humanitarian organizations.

5.67 Management of Temporary Setup for Children and Elderly:

After returning from evacuation centre, people set up places for children and elderly people to stay and sleep. This is a kind of temporary set up until the house is reconstructed or repaired.

5.68 Maintenance of Tube Well for Drinking Water:

Managing drinking water is another prime task for families after the flood. Hand pumps and traditional wells in many locations get completely defunct because of the flood. People repair their hand pumps so that they start getting water again.

5.69 Use of a Kind of Cooking Stand Made up of Mud to Cook Food:

As the ground is wet after flood, burning firewood or cow dung for cooking becomes difficult. People use already prepared mud Chulhas for cooking until the ground is completely dry.

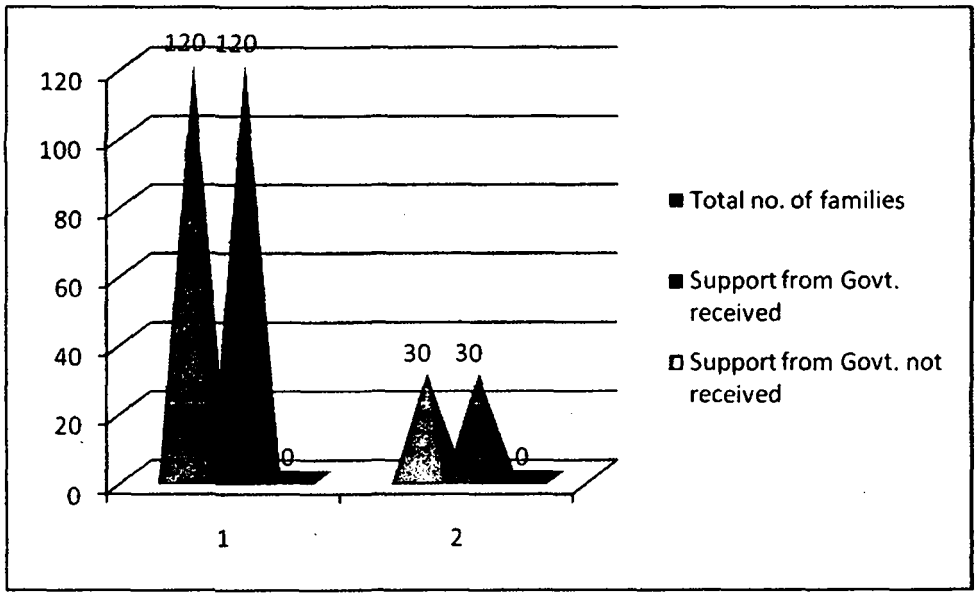
5.70 Use of Local Treatments to Manage Water Borne Diseases: There is usually outbreak of water borne diseases after the floods. The common diseases are diarrhoea, cholera, dysentery, pneumonia, skin and eye infections, worm infestation, etc. Livestock also equally suffer from many diseases. In such situation, people usually apply local treatment methods until they receive good treatments.

5.71 Govt. help Received After the Flood:

Generally, there is no practice to involve the community collectively for relief and reconstruction. Some comparatively richer people help the poor ones, whose houses are damaged partially or fully, provide the scanty locally available resources, like bamboos, etc., to rehabilitate them. Flood victims usually approach concerned institutions to ask for relief material like tents, clothes, utensils, medicine, etc. At the district level, District Disaster Management Committee (DDMC) has been formed under the chairmanship of Deputy Commissioner/ Disgtrct Magistrate. Other institutions involved in the relief activities are DAO, all Engineering Departments Like Irrigation, PHED, Water Resources, Electricity, Red Cross, Police and Military. There are some NGOs and INGOs also that have provided relief in the area.

Coordination of the relief operation among these agencies and joint planning is lacking. Many of them seem to work on ad-hoc basis and independent of each other.

Chart no: 5.1.12

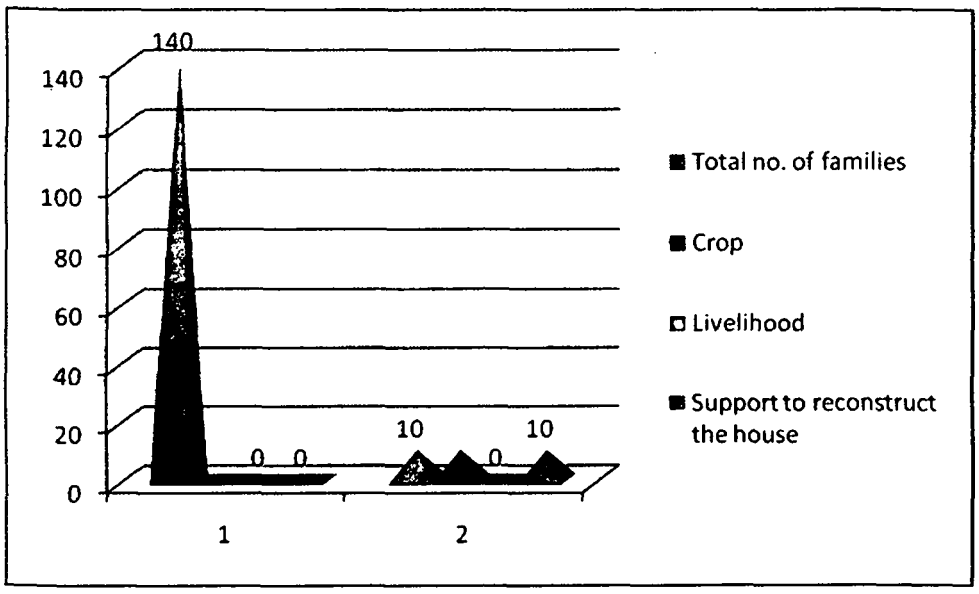


Government support after the flood is provided to the victims which is mainly given are insufficient. Moreover very less number of families can avail these facilities. Thus people focus more on their own efforts rather than Government help. When water level recedes, people return to their houses.

By and large, Government is the main source of providing outside assistance during flood. However, such assistance is provided usually after communication links are re-established and normalcy is restored. Assistance by government is in the form of grain (rice), cash towards house damages, provision of boats for rescue and relief etc. However, in most cases, the grain supplies are delayed due to disruption in the communication links. In a recent flood, each household got 500 grams of rice, 200 grams of pulses per day for about a week till the duration of flood. As rated by villagers, the quality of eatables supplied by the government was not upto the mark. Further, the distribution of relief materials was also not equitable as it did not take into account the size of the family and the actual need of the sufferers. For rescue and relief operation, neither the block nor the gram panchayat was found to own any boat.

During this flood, boats were taken on indent from district headquarter which were less than the requirement and were not available on time. The district fell short of the supply of boats because floods came simultaneously in a number of panchayats/villages thereby making the demand for boats very high. The compensation for partially damaged houses provided was inadequate and was received after one or two years. The government also provided 2 kgs. of seeds per acre to the farmers of Dakhinmohanpur Part VII as compensation for crop losses. This was considered quite insignificant compared to the loss incurred on seeds, chemical fertilizers and labour. Unlike relief management, some extent of community participation in rescue operation was found, although it was not satisfactory. In a few cases, neighbouring villagers come forward to provide shelter to flood victims. At times, assistance from some NGOs also becomes available.

Chart no: 5.1.13



Most of the people found it difficult to arrange things after the flood. Government facilities are provided in terms of crop, livelihood, rehabilitation grant to reconstruct houses etc. it is found in the study that only 10 households out of 150 are able to avail this benefits.

During the flood event of 2004 & 2007 in Rangirghat and Sildubi, there was no immediate rescue operation from the government side in the flood-affected areas. District Officer and District Police Officers visited the area only after 3 days after the occurrence of flood. In Rangirghat, a relief package containing one tent, one plastic sheet, one school bag, note books and pencils for the children and a cash amount of Rs 10,000/- aprox for each of the 26 affected families were distributed by the District Administration. According to the community, only those, whose houses were totally damaged, were provided relief package. However, no relief package was available to those whose houses were partially damaged. No food items were given in this package. Similarly, relief packages were distributed to the affected families of Sildubi. According to the community, about 102 people received the package of two bundles of tin roof and Rs.2000/- as rehabilitation grant. Many people of the area criticized this relief operation as they felt that there was inequitable distribution of the fund and that the needy people did not get the relief package while some people of the same family got the package repeatedly. The district administration gave priority to reconstruct the damaged embankment in Sildubi and Rangirghat embankment areas. The Block Development Officer had given word to the flood affected people to supply all type of help for reconstruction and rehabilitation. Till the end of the field visit, a total of 200 persons received the rehabilitation grants which varies fron Rs.5000/- to Rs.10,000/- of cost value.

Other aspects like clothing, shelter and food are managed by community , when the water level starts to subside, occurrence of waterne epidemics like diarrhea, cholera, dysentery, pneumonia etc is high. Similar is the case with the livestock. Help from outside world often comes after the flood causes damage to the community and which most of the time is insufficient and reach late. Some of the community leaders found to provide assistance to the affected families.

The level of education and literacy rate is poor and as such it affects in dealing with flood in pre, during and after flood conditions. People lack knowledge in Government policies and programmes with regard to flood and disaster management. As such people don't believe in flood forecast and they develop wrong prediction of flood and sometimes become panic and don't cultivate their land in panic of flood and as such their economic condition gets worse. But early warning techniques are very

good and they use local mikes placed in mosques and temples for flood warning and thus human casualty is almost nil in these communities.

5.72 Other Community Based Coping Strategies in Study Area: The coping stragies found in Sildubi and Rangirghat GPs can be divided into short term and long term coping mechanisms which are as follows:

5.73 Short Term Coping Mechanisms:

People have lived with floods for years and thus have devised their own way to cope (short term strategy) and (long term strategy) with them. Various flood management strategies taken by the local communities have been already highlighted above. These are further concisely put here under coping strategies adopted in Sildubi and Rangirghat villages. Coping strategies are short term in nature. In order to reduce the effects of flood, people living in the flood prone areas of Sildubi and Rangirghat villages have demonstrated certain coping mechanisms as mentioned below:

- Preferring cheaper food at times of food shortage.
- Borrowing food on a barter system or buying on credit.
- Spending savings on food, clothes and treatments.
- Reducing the frequency and amount of food consumption by youth family members.
- Selling household assets like livestock, utensils, land and gold at the time of extreme need.
- Migrating to the nearby cities during monsoon by handing over the assets to close relatives.
- Changing food composition and practices, (in general, people take green vegetables,with rice or *roti*).

- Preparing temporary *machan (elevated place)* to stay.
- Preparing seed beds of paddy not at once but at instalments with certain interval of time.

5.74 Longer Term Coping Mechanisms:

Longer term coping mechanisms are more sustainable to manage the effect of flood. Some of the measures include the following:

- Cultivating pady and *sakarkhanda(sweet potato)* etc. in the area where the land is covered with sand as means of securing alternative livelihood.
- Raising homesteads and cattle sheds above the flood level of last ten years.
- Constructing channel in the villages to divert flood water.
- Raising height of newly installed hand pumps.

5.75 Summery of the PRAs & FGDs :

The participants in the PRAs and FGDs generally have a comprehensive understanding of the biophysical resources, the seasonality of availability of water resources and the complex relationship of seasonal distribution of rainfall and runoff (including river flows from upstream) with crops being grown in the locality. They are aware of occurrence of 'usual floods'. In case of Sonai Development Block, a general perception is that extreme floods occur when the flood water enters by the upper catchments in Mizoram. They do believe that, local rainfall, even in extreme cases, cannot trigger an 'extreme flood'. People also rule out that an extreme flood can neither occur without 'floodwaters' in the major rivers nor in non-flood-peak season. In both the localities, 1997 was cited as an example of extreme flood, whereas the flood event in 2003 was cited as a usual flood. Again in Sonai Development Block, which was flooded twice in the same flood season, the cause of late flood was adjudged to be related to breaching of embankments in addition to natural causes. It is

generally understood by the flood-prone people that only the big and/or extreme flood events are 'dangerous' for them, which warrant early preparedness. They also believe that early preparedness for the extreme events could have reduced their loss burden to a significant extent. However, they do not often get the benefit of early warning to get prepared for an imminent flood. They are sometimes warned by their peers and village elders, which do not provide them the impetus to take firm action due to the fact that such actions often cost them dearly. In all the PRAs and FGDs, it is generally found that they do not find any source, led by government and/or non-government institutions, from where they can get reliable early warning. People complained about current methods of disseminating flood-related information through the electronic media (radio and television). They found the information 'not so clear', 'not relevant for their locality', and often 'too technical'. People are of the strong opinion that the government agencies should employ someone, preferably at block level , to provide local-specific early warning with sufficient lead time in order to allow them to consider appropriate preparedness measures. When asked about preparedness measures, they could not immediately think of any specific collective measure.

However, they could easily identify 'household-level preparedness measures such as (i) safeguarding food items, seeds, and valuable belongings; (ii) subject to availability of funds, safeguarding dwellings; (iii) preparing rafts and mending boats; (iv) raising platform within the household/dwelling to avoid rising flood waters; and (v) transferring vulnerable family members to houses of relatives living in upland areas etc. Due to lack of understanding of the imminent flood, they often do not harvest cultured fish or growing vegetables and suffer losses.

Economic hindrance often do not allow poor households to increase the plinth height of their dwellings, even though it is understood that such a measure could be quite effective to avoid inundation and destruction of the dwellings. "The cost for labour appears to be quite high" – opined a number of poor farmers.

Although during-flood responses are generally perceived as 'family-level' affair, often people demonstrate a collective and cooperative spirit and help each other. People recognize that the youth generally are very helpful towards implementing community-level activities. People are of general consensus that, during 'extreme flood events', they need to relocate themselves either to flood-free

highways, raised lands or to flood shelters, if there is any in the neighbourhood. Fear of possible theft in their absence is considered as the prime reason which deter many households not to relocate even if a flood shelter is accessible. However, they rely on the surveillance of the local youth to maintain law and order inside a flood shelter. People generally agree that, if proper guidance is provided, local youth can manage a significant proportion of the activities during floods. There are, however, a few activities which the local people cannot solve by themselves. According to the flood victims, there is a need for providing health care services during a flood.

People also do not find adequate sources for collection of drinking water. They are used to collect water from wells, ponds etc. that have been made flood-free by raising the height above flood peak. People complained that such tubewells are scanty and many people are forced to drink 'available flood water', even though they are aware that such water could cause health disorder. There is a clear lack of information and knowledge regarding methods to make floodwaters free from pathogens. Only one person present in one of the GP level meeting in Sildubi reported that he had heard about 'a tablet' that could be used before drinking 'available flood water'. However, he could not recall how much of water could be 'treated' by such a tablet and how to find that tablet. When prompted that such tablets are commercially available, people immediately wanted to know where they could find such tablets and at what cost. People have heard about 'oral saline therapy' and the use of commercially available orsaline sachets; they appreciated radio and television commercials for widespread knowledge regarding the use of such methods of treating ailing people. They opined "if we could handle stomach-related problems on our own, half of the health-related problems could be solved without going to the doctor". People complained that during extreme floods, they often do not see the doctors appointed by the government. They would like to see the doctors helping the ailing ones and giving medicines as needed. They are of the opinion that it should be the responsibility of the government to ensure such services and the local government should check availability of the professionals before giving them their salaries. People find it difficult to maintain livestock during an extreme flood event. During 'normal floods', they informed that livestock can either be safeguarded by putting them on a bamboo-stem raft or relocating them in higher places such as highways. They informed that like human beings, livestock also suffer from 'stomach-related'

problems due to continued exposure to polluted water. They also find it difficult to collect and offer livestock feed during high intensity floods. People complained about not having veterenary doctors in the neighbourhood to provide treatment to ailing livestock.

People appreciate the roles of the local elite, the well-to-do and government agencies towards meeting various needs at flood shelters during extreme floods. However, they complained regarding availability and distribution of relief during floods. They feel that the needs of the poor are often not met, and often inappropriate relief material in inadequate quantities are supplied to the flooded areas. People recommended that a mechanism should be established to ascertain priorities of the needy families as soon as warning of an 'extreme flood' is issued. They also opined that people who do not come out of their dwellings (often the lower middle income families) often do not receive any relief material. There is a consensus that during floods people often do not find adequate services for supplies of energy (cooking fuel, fuel for lighting etc.).

When asked whether the people would consider protection infrastructure of the Sonai river right bank, people responded positively. They understand the implications of a breach in the embankment and assured that they would voluntarily and collectively protect the embankment by offering their physical labour. People in general expressed their willingness to participate in local level hydrological planning activities, particularly in those which would eventually reduce flood vulnerability of the area. They could not, however, remember past incidents where they'd been consulted prior to planning and implementation of any water related activities.

According to flood vulnerable people in the study locations, the biggest failure in flood management is perhaps in arranging 'post-flood rehabilitation programme' in appropriate quantity and quality. They expressed a common concern that post flood relief should match the needs of the people and such activities should be launched following a comprehensive community has been represented well in the PRAs, the need for post-flood crop production and rehabilitation was given high priority. Distribution of seedlings of dominant crops following a late receding flood appears to be the most important rehabilitation activity. Farmers informed that they used to procure healthy seedlings from far away non-flooded areas, whereas the measure

could have been greatly facilitated by developing a local seedling bank in raised lands by private owners. under the supervision of the Agriculture Officer people in Sonai Development Block informed that the seedlings received often in cooperation with local owners of high lands, and distributes these seedlings. However, they expressed their dissatisfaction regarding inadequacy of the measure. The people in the area never satisfied of such a measure, but they understand its importance towards managing post-flood agricultural rehabilitation.

People also recommended that, given the remainder of the post-flood season following a major flood event, the Block Officers should come forward with innovative technologies. Farmers expressed their reluctance to grow lesser-known crops, due to not having confidence in the market response. To them, subsistence appears to be the most important consideration in making choices for the postflood crops. farmers expressed that government should provide soft credits on 'easy terms'. Farmers are generally afraid of 'too much paper work', which is why they do not seek assistance from scheduled banks. People also expressed their needs for credit to mend their deteriorated dwellings, and to start other income generating activities such as rearing livestock, poultry etc.

People expect government's direct facilitation towards establishment of permanent flood shelters in their locality. They also expect that government would facilitate a community based flood management plan at Union levels, which may be implemented by the local government institutions. They also expect that a significant proportion of the fund needed to implement such a plan should be borne by the government. They expressed their willingness to contribute either in cash or in kind to implement such a plan.

From the above, it is clear that there is enough potential available in villages but this needs proper exploitation through a systematic approach. Although the villagers are aware of their strength, they lack proper leadership. They are willing to join the community flood management drill provided proper guidance is available through specific training/orientation programmes for flood management particularly in the areas of health/veterinary care, agriculture, rescue & relief etc. organized from time to time so as to make them equipped with specialized skill to tackle flood situations. A flood management committee may provide guidance to the villagers in

handling different aspects of flood management. Most flood management activities are labour intensive. People are willing to assist if a token payment to compensate with their cost of living is provided under the flood management programme. This is apart from a few volunteering their services in community interest for 3 to 5 days, free of costs in a flood season.

5.76 PRA on Impact of Flood in Livelihood of Farmers:

There are number of impacts of flood in the peoples' live and livelihood as shared by the local people during the field survey . Some of the important impacts are discussed below.

• ***Increased heath hazards on vulnerable groups:*** The workload of women, children and elderly is increased as young force leaves the village in search of employment for several months to years. It has created negative implication on the women's health and social status.

• ***Increased expenses in treatment*** : The flood occasionally has disrupted the education and health services at local level. The disruption of educational and health services have resulted into poor educational and health performance. The high percentage of drop out in the schools and increased number of patients suffering from flood related diseases are its evidences. Weak health status, malnutrition and other health hazards are likely to increase where poor have to spend more in treatments. For this, they need more money in treatment.

• ***Increased Expenses in Farming:*** Taking other's land as sharecropping and on rental basis (to cultivate on annual basis) / Bhagi System are the common practices in the study area. Three fourth percent of farmers are landless who mostly earn their livelihood either by cultivating other's land or by daily wage labour. In order to invest on farming they take loan from local moneylenders on an exorbitantly high rate interest . The flooding of 2004 and 2007 put them in great trouble.

• ***High price of seed:*** Floods also damage stored seeds and grains of cereals and vegetables. The price rate is higher for the seeds and is mostly procured from India. The poor farmers are obliged to use the wet seed which results in less germination.

• ***Less return from animal husbandry:*** High mortality rates of livestock are found due to suuden attack of unknown illness among the livestock and lack of proper medical facilities for livestock.poor fodder management etc. It is difficult to keep the livestock healthy and manage their appropriate feed during this time.

• ***Poor performance of social institutions and NGOs:*** The social networks and institutions, NGOs which are considered community's assets, are eroded as people have no time to discuss and promote these networks and institutions. People become more individualistic to run their livelihood. With poor social networks, they are not able to secure the resources from outside. In fact, the NGOs have poor performance which results in poor resource mobilization.

• ***Changes in cropping pattern:*** Flood also impacted cropping patterns. Due to flooding and inundation, in majority of the cases, farmers were unable to transplant paddy in time. This delayed the harvesting of paddy as well as plantation of winter season crops. The increased dampness is also responsible for change in the cropping pattern. The change in

5.77 Expectations from Government in Rangirghat and Sildubi Gram Panchayats:

People expect that the government to protect them from the sufferings caused due to floods. They expect the government to construct multipurpose dams on the upper reaches of the river so that these can moderate floods. They would like sluice gates to be constructed at a few places in the existing embankments for controlled release of water so that the pressure of floods will reduce to a sustainable level. As most floods are due to breaches in the existing embankments, people expect that the government should repair the breaches in a manner that these may last long. There was a strong felt need for one flood shelter on uplands/ high land areas in every panchayat to

accommodate about 500 families with proper facilities of sanitation and hygiene. Another need was for acquisition of boats (4 to 5) at the panchayat level for immediate rescue and relief operations. Provision of safe and potable drinking water during flood months was another expectation from the government. As suggested by the BDO (Sonai Development Block) of the area, provision of safe drinking water and other disaster management mechanisms could be done through construction and maintenance of the existing disaster management committee at the block level and it could be bestowed with specific power and functions with legislative approval to make it more useful. Similar committees at the panchayat level with legal power may also be constituted. It was felt that resources from Rural Development fund could be utilised for rescue, relief and income generation activities in flood affected areas provided some modifications are made in the existing guidelines. As regards allocation of shelter under Indira Awaas Yojana (IAY) and Prime Minister's Gramin Yojana (PMGY), the amount of assistance is increased to Rs. 75,000 per unit of IAY for construction of houses above flood level in flood affected areas.

5.78 People's awareness about the Government Policy/ Programmes Regarding Flood Management:

1) The Government has taken some initiative to strengthen the CBFM techniques and coping strategies in the village areas. These include training and capacity building programmes, awareness generation, organizing sencitization meetings/ workshops, holding gram sabhas etc. but due to ignorance and lack of wide publicity about the programmes people could not avail the benefits of these servicers. Almost 90% households are ignorant about the Government Policies and Programmes for floods. In Rangirghat G.P as it is close to block head quarters they got training sponsored by block regarding search and rescue and first aid but the people in Sildubi GP are ignorant about this. Again there is lack of continuity in the Governmenmt policy and programmes.

2) The Red Cross has made some efforts to mobilize the youths of VDMC and train them in disaster management techniques. Regular programme of CBFM is lacking in both the villages. Distribution of pamphlets, posters and other

materials is done occasionally. Raising awareness through mass media (radio bulletins, television, newspapers etc.) in local languages is used.

3) Preparation of documentary films; slides for public shows are shown at block head in two times at block head quarters of sonai development block is accessible by the people of Rangirghat G.P. Poetry, debate and essay competition in the schools on flood is organized occasionally especially on 29th i.e National Disaster Reduction Day (NDRD). The strong linkages which NGOs have with grassroot level have greater influence among the community people for creating greater public awareness on flood risk and vulnerability, initiating appropriate strategies for strengthening the capacity of stakeholder, groups to improve disaster preparedness, mitigation and improving the flood emergency response capacities of the stakeholders.

Plastic sheets and tents are used for temporary shelter. Similarly, some of the people managed to keep their food stocks in the elevated locations. But in high land areas of the villages, there was no such preparation for it. Most of the households of these community have adopted wait and see strategy. Some of the families sent their female members and children to their maternal home due to fear of flood.

5.79 Summary of Major Findings:

The present level of community participation in flood management is characterized by inadequacies and inefficiencies in several aspects. This is primarily due to lack of community spirit among villagers. No one in the past among local leaders, officials of the government and NGOs/VOs made any effort to evoke a sense of community sprit in them (villagers) for flood management in an effective manner. In the absence of any formal institutionalized approach, people take family based decisions when facing the flood. Even during heavy floods, many households prefer to stay back in their own houses to look after their belongings and cattle even though instances of theft and related problems are not frequent. The reasons for not shifting to safer places (temporary shelters) as cited by the villagers, are lack of privacy and space for keeping their belongings as also location of such shelters, which are far off from their

houses. Hence, they generally respond to flood by way of raising bamboo/wooden platforms for providing safety and security to children and women. While leaving their houses, the family generally moves together. However, in some cases, one male member of the family stays back to guard the property against possible thefts.

Forecasting and warning mechanism in Rangirghat and Sildubi Village under the study was inadequate. Flow of information about impending floods has many gaps that cause delays in the process to the detriment of the people. The local people's expectations in this regard are high as they expect prompt warnings about floods at the village level.

Food and shelter assistance is thoroughly inadequate and is received late. There are differences in the quantum of flood relief provided in different places of flood affected areas. The assistance provided is not based on ground realities in most of the cases.There is no leadership/local organization which can issue guidelines, pertaining to flood management at the village level.

Major study findings are outlined in following points keeping in view the objectives framed and chapterisation plan which are as follows:-

1. There is no flood warning system and 95%people use traditional practices of watching clouds and rain.

2. 42%People temporarily shift to high lands, public places, schools, embankments, etc during floods.

3. The 85% communities have no collective pre-coping mechanism. All the activities are done on individual basis.

4. 92% of the households in fishermen (Maimal in local language) community have individual pre-coping practices such as storing foods, keeping plastic sheets and tents etc. But there is no such practice in the community of tea gardens.

5. Proper coordination is lacking among the agencies involved. Only 50% affected people received Government relief. The external support provided to the affected communities is inadequate and inequitable.

6. Due to heavy sediment load in the river, the bed level is rising every year causing more threat of flooding in the future.

7. Proper engineering design of river training works is lacking.

8. There is no permanent flood management committee in the communities. However, they form an ad-hoc village and Gram Panchayat level disaster management committee (VDMC/ GPDMC)when initiative are taken by GP Secretary and local NGO with support from the government

9. Strong confidence in self-help is demonstrated by the communities, but scarcity of fund remains a major constraint.

10. People temporarily shift to high lands, public places, schools, embankments, etc during floods.

11. The 80% communities have no collective pre-coping mechanism. All the activities are done on individual basis.

12. 95% Proper coordination is lacking among the agencies involved. The external support provided to the affected communities is inadequate and inequitable.

13. Due to heavy sediment load in the river, the bed level is rising every year causing more threat of flooding in the future.

14. There is no permanent flood management committee in the communities. However, they form an ad-hoc committee when river training works with support from the government agencies are to be constructed.

15. Strong confidence for self-help is demonstrated by the communities in two GPs, but scarcity of funds remains a major constraint.

16. There is no flood warning system and people predict flood by watching the clouds and the rain.

17. Some of the households in maimal (fisherman) community have individual pre-coping practices such as storing food, keeping plastic sheets and tents etc. But there is no such practice in the community of tea tribes.

18. Proper training of Disaster Management Teams and Committees being undertakenin 80% Villages but is lacking in Rangirghat GP Study Area

19. The 90% communities in Sildubi and Rangirghat Gram Panchayat entrust the elders for flood forecast who listen to the weather report from radio broadcasts and watch flood events for the purpose.

20. Although the Government has completed embankments to stop water spilling over the banks of Rukni river , the threat of flood damage will remain the same.

21. Growing urbanization and network of roads and infrastructure are increasing the drainage congestion and the depth and duration of inundation especiaaly in Rangirghat G.P area are also on the increase.

22. The Red Cross has made some efforts to mobilize the youths of VDMC amd train them in disaster management techniques.

23. Regular programme of CBFM is lacking in both the community

24. Distribution of pamphlets, posters and other materials is done occasionally

25. Raising awareness through mass media (radio bulletins, television, newspapers etc.) in local languages are used.

26. Preparation of documentary films; slides for public shows are shown at block head in two times quarters of sonai development block is accessible by the people of Rangirghat G.P.

27. Inclusion of Flood Management Manual.in school syllabus by ASDMA helps the 100%children of Assam Govt. Schools to get basic ideas of floods and other disasters.

28. Poetry, debate and essay competition in the schools on flood is organized by Assam State Disaster Management Authority(ASDMA)occasionally especially on 29th i.e National Disaster Reduction Day (NDRD).

29. District level, state level workshops involving community based organizations/ NGO namely Sildubi Dolphin club has been attended by the 5 NGO members.

30. Provision of safe drinking water—installation of tube well or other pipe water arrangement is done during the time of flood in Rangirghat GP as it is close to Block Head Qarters.

31. Materials for making temporary latrines is visible only in case of Rangirghat G.P.

32. First Aid medicines especially for water borne diseases; treatment with like paracetamol, Jevanjal. Chlorine tablets, Oral re-hydration powder etc.

33. Fast food items like satoo, beaten rice, bread, biscuits, beans etc is preserved as ready food during flood time mainly by the tea and ex- tea garden communities.

34. Temporary Cooking utensils like stoves are kept for flood time and it is practiced by all the communities in both the villages etc.

35. Provision of energy for lighting and cooking such as lantern, torches, LPG gas cylinders are found in well to do families and not in poor families.

36. Tents, plastic sheets etc are provided by the Government during the taking temporary shelter due to flood.

37. NGOs play a very important role in mobilising communities and in linking with G.P / Block Office for flood relief.

38. The strong linkages which NGOs have with grassroot communities have greaterv influence among the community people for creating greater public awareness on disaster risk and vulnerability, initiating appropriate strategies for strengthening the capacity of stakeholder groups to improve disaster

preparedness, mitigation and improving the flood emergency response capacities of the stakeholders.

39. In addressing the emerging concerns of climate change adaptation and mitigation, NGOs has provided training to local communities and thus sensitized them for global warming and climate change. It is mainly done by the NGO members of Sildubi Dolphin club who got the training at district and state level on disaster preparedness. They have tried to inculcate innovative approaches based on the good practices by planting tress which can reduce the impact of global warming and climate change and thus can reduce the incidence of flood.

40. NGOs often bring the financial resources from bi-lateral and multilateral donors for implementing pragmatic and innovative approaches to deal with flood risk and vulnerability, by effectively integrating and converging the various government programmes, schemes and projects to create the required synergy in transforming the lives of at-risk communities.

41. Setting up a Functional GO-NGO Coordination Platform during nonemergency times is very much lacking in my study area.

42. Efforts for.GO-NGO institutional arrangements is insufficient and government should be more proactive in order to achieve full fruit of CBFM.

43. Common accessibility to flood affected areas is possible only with the efforts of NGOs. NGOs play a vital role in preparing and developing DM planning and operational strategies.

44. Focus on the most vulnerable communities and people like aged, weak, handicapped is done by the NGOs members.

45. Setting and Committing to Minimum standards of selp help is done by the NGO.

46. The housing condition of flood affected people in bith the villages are bad and they hardly go for construction of any permanent structure and continue to live in unsanitary condition.

47. Few of the families have constructed pucca houses after raising the plinth level although it is affected by flood every year.

48. It is learned from the FGD that community based flood management techniques are getting more systematic in these villages due to the introduction of Gram Sabha being conducted by GP offices as per the instruction of Government of Assam. As such it is helping CBFM to take a structured shape.

49. NGOs namely Sildubi Dolphin Club are encouraging rural women through Self Help Groups (SHGs) in availing micro finance/ loan and thus it is providing the women a platform to discuss their problems collectively including the problem of flood and how to deal with it. Researcher has observed that women are more prepared to face the flood before it strike to their family's economy and thus they keep some amount of rupees e.g Rs.2000/- to deal with problems which will arise during the time of flood.

50. Gender sensitization in flood management which were lacking in recent years are gaining ground due the increase in the level of education among women in these communities.