

**Research Article**

## **Crises Mapping and Coping Strategies: Participatory Evidence from Rural Bangladesh**

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### **ABSTRACT**

The study focuses on rural livelihoods in the northeast region of Bangladesh highlighting two important aspects: exposure to crises and household coping strategies. It uses participatory methods and quantitative techniques to understand the livelihood dynamics and the extent of livelihood securities. In the broader context of vulnerability, the study investigates how rural people deal with risks to achieve livelihood securities. Findings show that rural people handle minor risks by self-insurance mechanism including cash in hand and household savings. They manage intermediate risks through community or market-based arrangements including borrowing from moneylender or MFIs. For major risks such as flood and cyclone, they often urge for government or donor support. Household's coping capacity depends on the appropriateness of risk management tools and strength of the households (resilient, weak or fragile). Adaptation and resilience to risks largely depend on household's resource base and external interventions including inclusive microfinance.

**Keywords:** Vulnerability, Coping capacity, Adaptation and resilience, Participatory approach

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### **INTRODUCTION**

Exposure to risks and shocks destabilises household's well-being and increases its probability of moving down the poverty line. The probability of being poor or

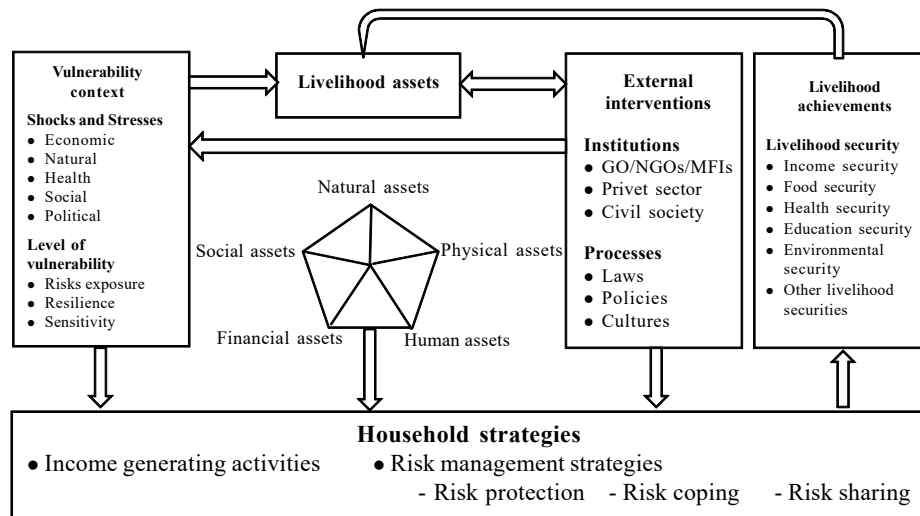
remaining poor is commonly known as vulnerability to poverty in the literature (Morduch, 1994, 1999; Dercon, 2006). In Bangladesh, various economic and non-economic shocks distress rural households at regular or unanticipated intervals. Rahman (1996) and Hussain (1998) organised them into five broad categories. *Seasonal shocks* cause variations in income and consumption due to seasonal fluctuations in livelihoods. *Financial insecurity* due to lack of employment opportunities or death of main earners is severe in low-income group. *Natural disasters* including floods, drought and cyclones hit Bangladesh almost every year causing life-threatening impacts. *Health crisis* including lack of access to health services, water and sanitation causes vulnerability to contagious and epidemic diseases. Finally, *Social crises* result from social injustice and deprivations such as marriage with dowry, land disputes and gender discriminations. Rural households use various formal and informal insurances to cope with such shocks. Reducing vulnerability to poverty is a major concern for rural households in Bangladesh.

Coping capacity is a major indicator of household strength in the poverty scale. Households with effective resources are more adaptive and resilient than households that are defenceless due to lack of power and voice. Weak households often use informal insurance such as borrowing at usurious rates and depleting household savings. These are immediate solutions to crises but at the cost of household's resource base. Strong households, on the contrary, use formal insurance strategies such as loans from banks or MFIs that has negligible negative impacts on household capacity (Rahman, 1996; Morduch, 1999). Weak households often need external support to cover risks and reduce vulnerabilities. Development inputs in the form of microfinance, health, nutrition, education and training may enhance sustainable coping strategies (Hussain, 1998). Some of these inputs are preventive measures such as microfinance and the others are curative interventions such as social protections through such as cash transfers, food aid and other grants to the poor who are already affected and uninsured (Morduch, 1999; Dercon, 2006). One of the biggest challenges for the poor in rural Bangladesh is coping with shocks and adaptation to the resulting impacts. Their limited capacity to protect from such crises often results in chronic exposure to poverty and vulnerability. In this background, current research aims to map the vulnerability context and livelihood strategies of the rural households in the northeast of Bangladesh.

### **Conceptual Framework**

The study aims to investigate rural livelihoods study through the lens of sustainable livelihood approach (SLA). It is a useful analytical framework to understand complex

livelihood dynamics of the rural poor. Household's livelihood comprises five major components: livelihood assets, vulnerability context, household strategies, external interventions and livelihood achievements (Figure 1). Livelihood is sustainable when a household builds resilience to shocks and maintains its assets at a reasonable level now and in the future (Chambers and Conway, 1992; Chambers, 2006).



**Figure 1: Sustainable Livelihood Framework**  
 Source: Adapted from DFID (1999)

Ogata-Sen Commission on Human Security (Ogata-Sen, 2003) redefined the concept of sustainable human security as freedom to 'act or attain' livelihood security instead of freedom from certain deprivations. Bohle (2007, 2008), on the contrary, suggests an agency-based approach to reducing vulnerability through human capabilities. In his *actor-oriented* approach, the vulnerable are *actors*, not mere victims. They take various strategic *actions* to make a living in risky environments with some specific *agendas* within the *arenas* of conflicting socio-political environment. However, sustainability largely depends on both *actions* (appropriate household strategies) and *agendas* (struggle with strategic barriers including intervention failure). In a critical discussion of SLA, Scoones (2009) pointed out that there is a possibility of intervention failure in livelihood strategies through gaps in knowledge, scale, politics and dynamics of the external sources. Considering these tweaks to SLA, this study exclusively focuses on rural livelihoods highlighting the vulnerability context and household strategies in northeast rural areas of Bangladesh.

A household’s exposure, resilience and sensitivity to shocks determine the level of its vulnerability to risks. *Exposure* is the likelihood of shocks and the magnitude of their impacts on a household. *Resilience* refers to the capacity of the household to recover from the adverse impact of shocks and stresses. Resilient households tend to cope with crises, absorb stresses and revert quickly to their previous state without serious repercussions. *Sensitivity* is the household’s state of withstanding the impact of shocks. A household with more sensitivity is likely to have a greater impact on its livelihood. A resilience-sensitivity matrix (Table 1) shows a household’s degree of vulnerability. Highly sensitive households with low resilience are highly vulnerable to risks whereas low sensitivity but high resilience makes them robust and non-vulnerable. Households are moderately vulnerable when both indicators are equally extreme (Davies, 1996). Oshaug (1985, 1993), on the contrary, categorised robust households as ‘enduring’ and having the capacity to maintain livelihood security throughout the year. She considered highly vulnerable households as ‘fragile’ that are always insecure against any shocks. Between the two extremes, there are ‘resilient’ households that suffer shocks but recover quickly.

**Table 1: Resilience-Sensitivity Matrix**

| Indicators  | Resilience |            |                   |
|-------------|------------|------------|-------------------|
|             | High       | Low        |                   |
| Sensitivity | High       | Vulnerable | Highly vulnerable |
|             | Low        | Robust     | Vulnerable        |

*Source:* Davies (1996)

Household strategies include income-generating activities and risk management for livelihood securities. Income-generating activities in rural areas are generally wage and self-employment. Wage employment includes day labour, migratory and seasonal labour in the formal or informal sector. Self-employment has five categories: agriculture, agro processing, trading, small-scale manufacturing and services. The choice of livelihood activities depends on gender, age, health status, geographic location and the socio-economic and political environment. A typical rural household might engage in crop production, seasonal day labouring, retailing fruits and vegetables to the local market, small trading and migrating to a large city or abroad for wage earning.

*Risk management strategies* include strategies to cope with or prevent risks (Chen and Dunn, 1996) and share risks with others (Fafchamps, 1999). Although ‘coping’ refers to temporary adjustments in household activities to combat shocks and

stresses, ‘adaptation’ denotes long-term adjustments. *Risk coping* strategies are *ex post* measures to reduce the impact of risks such as reducing consumption expenditure, borrowing from formal or informal sources, and drawing down assets. *Risk protection* strategies are *ex ante* measures to reduce the probability of future risks. These include choosing low-risk–low-income activities, diversifying household employment and accumulating protective assets. Low-risk–low-income activities may contribute less to household’s endowment but help reducing the risks of asset failure. Diversified employment helps household income smoothing particularly during seasonal unemployment. Protective assets accumulation is an insurance against future loss. Households mobilise savings and accumulate store value assets to liquidate when emergencies arise. In *risk sharing*, households pool resources to share risks with internal or external agents. This includes family formation, patron-client relationship, sharecropping and social insurance.

A household’s coping capacity depends on its action to recover losses using one of the following strategies: non-erosive, erosive and damaging (Table 2). ‘Non-erosive’ strategies involve liquidation of protective assets without affecting the long-term productive capacity of the household. When the effects of shocks

**Table 2: Risk Management Strategies**

| <b>Strategies</b>                | <b>Actions</b>   |
|----------------------------------|--|
| <b>Non-erosive:</b>              | Reducing quality of food consumption   |
| Disposal of protective assets    | Liquidating savings<br>Exchanging or pawn store value assets e.g. jewellery, land<br>Borrowing from friends and family at zero rate<br>Taking low paid wage labour or migrate to find job. |
| <b>Erosive:</b>                  | Reducing quantity or quality of food consumption   |
| Disposal of productive assets    | Selling of machinery, livestock and other productive assets<br>Borrowing from formal sources<br>Reducing quantity or quality of crop production<br>Reducing spending in investment goods   |
| <b>Damaging:</b>                 | Fasting for lack of food (Reducing both quantity and quality)  |
| Assets depletion and destitution | Borrowing at usurious rate<br>Selling land<br>Begging for charity<br>Selling home and migrating as homeless  |

Source: Adapted from Donahue (2000)

continue, the household employs increasingly desperate strategies. In 'erosive' strategies, households sell or exchange productive assets to protect from losses and consequently undermine its productive capacity. Finally, the household becomes more desperate to apply asset depleting and 'damaging' strategies when only few or no coping tools are left. At this stage, the household condition is such that there is no alternative to destitution. Households using 'non-erosive' strategies are strong enough to withstand stresses and thus least vulnerable or non-vulnerable. 'Erosive' households are weaker and less vulnerable whereas 'damaging' households are the weakest and thus highly vulnerable to poverty.

## RESEARCH DESIGN AND METHODOLOGY

### Study Area

The study focuses on two villages in the northeast region of Bangladesh known as Sylhet. Geographically, Sylhet has two main topographies: (1) hills, small hillocks and high plains along the Indian border and (2) low-laying flood plains with free water wetlands at the centre. Highlands locally known as *Ujan*, *Pahar* and *Tilla* are normally free from flood but prone to droughts. Agricultural production is relatively high in this region. Lowlands, locally known as *Bhati*, *Haor* and *Beels*, are less cultivable as lands remain under water around 3–5 months of the year. The natural setting of Sylhet contains rainforests, tea gardens, hills, hillocks, waterfalls, river valleys, *Haors* and *Beels*. From this setting, I have selected two villages from each topography: *Ausha* and *Bhadeshwari*. *Ausha* is situated in relatively fertile high plain, about 12 km away from the Sylhet city. *Bhadeshwari* is located in low yielding flood plain, about 40 km away from the city. The number of households in *Ausha* and *Bhadeshwari* are 226 and 217 dwelled by 1737 and 1208 residents, respectively (BBS, 2012).

### Sampling Design

This research used stratified random sampling technique to select respondents for household surveys. I divide the 'population' into independent strata (i.e. poverty groups) and then randomly select the sample households from the specific group. For household stratification, I used PRA wealth ranking exercise in which participants classified their households into three groups: ultra-poor, poor and non-poor. Then, I took 35 households at random from each stratum, which provided  $35 \times 3 = 105$  households in each village and  $105 \times 2 = 210$  households in the total sample.

## **Data Collection Methods**

Data collection process was a combination of qualitative and quantitative methods using four instruments such as participatory rural appraisal (PRA), focus group discussions (FGDs), household questionnaire (HQ) and poverty scorecard (PS). Qualitative–quantitative combination followed ‘qual-quant-qual’ sequence of PRA–PS–FGD–HQ to back up, cross check or verify the information gathered by alternative methods. PRA exercises gathered livelihood information including household assets, vulnerability, livelihood interventions and outcomes. PS collected data to estimate poverty likelihood as a proxy for vulnerability to poverty using 10 simple questions carefully selected from the national household survey questionnaire (HIES, 2010). The HQ gathered demographic and livelihood data for an in-depth vulnerability assessment. Both FGD and HQ accumulated data on types of crises, and coping and adaptation strategies. Quick and cost-effective instruments like PRA and PS provided backup information for relatively lengthy methods like FGD and HQ. A team of three members—the author as principal investigator and two data collectors, conducted the whole survey. The principal investigator was responsible for facilitating the PRA exercises and moderating group discussions whereas data collectors took field notes, operated a digital recorder and transcribed PRA exercises.

### ***1. Participatory Rural Appraisal***

In PRA, researchers are outsiders who build rapport, facilitate the procedure and then hand over to insider respondents who use maps, models, and diagrams to plan, discuss and evaluate their livelihoods and environment. Outsiders simply watch, listen and record the outcomes of the process in a relaxed mood (Narayanasamy, 2009). Participants in PRA in this study were residents of the village, irrespective of age and social status, interested in sharing information through engaging in interesting exercises. From a set of various PRA exercises in qualitative research, I chose the following instruments:

***Village Transects:*** Village transect is a rapport-building tool through which local people gradually gain trust and confidence through continuous interaction with researchers. At first, I met the village leaders and senior persons to obtain a general overview of the village. After a brief discussion, they approved the exercise and appointed a local person to accompany me in the observatory walk through the village. We passed through the residential areas observing resources and questioned people about the village. The whole process provided an ‘objective’ map of the village infrastructure including housing, drainage, sanitation and economic activities such as livestock management, rural trades and crafts.

**Social Mapping:** Social mapping allows people to present the village layout and infrastructure. In this exercise, participants prepared a map of their village including social and economic resources such as households, schools, tube wells, community centres and religious centres. To begin the process, the moderator first selected a venue, preferably a public place, explained the objective of the mapping exercise and then asked participants to draw a map of their village on the ground with features and landmarks in line with the objective. The exercise was interesting and engaging as the participants enjoyed having the freedom to choose symbols for the features, and landmarks and debate amongst themselves to finalise the map. At the end, one of the participants explained the map to the audience. Data collectors took relevant notes and transferred the map onto paper.

**Wealth Ranking:** Wealth ranking exercise is a people-centric appraisal of the wealth characteristics and well-being of rural livelihoods. In this exercise, I asked respondents to rank all households in the village using their own perception of relative wealth and level of poverty. The process included preparing a list of households from the social map, selecting criteria for wealth ranking, collecting information to make an index card for each household, sorting and grouping the cards, superimposing the classified households onto the map, and finally, verifying the information with a wider audience. The study used wealth ranking exercise data to identify poverty groups (extreme poor, poor and non-poor), select the sample and identify focus group participants.

**Seasonal Calendar:** Rural households are vulnerable to seasonal shocks and risks. A conventional household survey takes a snapshot view of rural livelihoods and thus is less effective in capturing these shocks. The seasonal calendar is one of the PRA tools that help analyse the seasonal variations in rural households. In this study, villagers prepared an outline of trends regarding the main economic activities, problems and opportunities throughout the year. They identified seasonal variations in crop production, employment and other livelihood opportunities depicting the frequency and magnitude of rural vulnerabilities.

## 2. Poverty Scorecard

PS is a quick and cost-effective assessment tool that measures and tracks the poverty level of a household or individual (Schreiner, 2013). It was developed by Mark Schreiner for the Grameen Foundation for quick measurement of poverty likelihood and intervention impact (Grameen, 2008). The scorecard requires 5–10 minutes to conduct the interview, tally the scores and instantly compute the poverty

likelihood using a simple calculator. The scorecard contains 10 easy questions readily answerable by all participants regardless of their educational background. Questions are carefully selected from a set of high frequency poverty correlates. These questions are readily verifiable with observable data sources. For example, the scorecard simply asks roofing or floor materials instead of the unobservable 'value of the house'. Each question has multiple-choice answers with corresponding response values. The sum of the appropriate response values from 10 questions gives the poverty score for a specific household. The score ranges from 0 to 100 where zero means most likely to fall below the poverty line and 100 indicates most likely to remain above the line. A field investigator can convert the score into poverty likelihood using a poverty index constructed from bootstrap regression calibrated on household income and expenditure survey data (Schreiner, 2013). The calibration process involved the national poverty line and its international benchmark adjusted for purchasing power parity (PPP). In this study, I estimated the poverty likelihood of the sample households using the PS developed by Schreiner (2013).

### **3. Focus Group Discussions**

FGDs aimed at issue-based discussions with the respondents. I organised three FGDs with three poverty groups (extreme poor, poor and non-poor) in each village. The main theme of the FGDs was the coping capacity and available strategies of the rural households against the crises. Participants also discussed the various types of crises they face in their livelihoods. Male and female participants also discussed gender issues in coping capacities. Each FGD involved 6–10 participants who discussed the various issues initiated and stimulated by the moderator.

### **4. Household Questionnaire**

The HQ contained demographic and financial modules to capture household information on health, education, income and expenditure, loans and savings, endowments, risks and shocks. The demographic module included gender, age, marital status and occupation. The key constructs of the financial module were sources and uses of loans and savings with special focus on coping capacities of the poor. To ensure validity and appropriateness, the questionnaire was pilot tested on 20 households before the final survey.

***Ethical issues:*** Ethical issues in this study have been mitigated in two ways. At first, I came across with the chief of each village under the study. I explained the

objectives and usefulness of my research project to them. This gave a political approval to my project. Then, fieldwork acceptability came in two approaches. *Firstly*, PRA has built-in rapport building mechanisms in which people willingly engage in interesting exercises. *Secondly*, before starting of each survey (PRA, FGD, HQ and PS), the facilitators had to give a short speech on the purpose and importance of the research and explicitly pledge for the respondent anonymity and data confidentiality.

## VULNERABILITY CONTEXT OF *AUSHA* AND *BHADESHWARI*

### Risks, Shocks and Stresses

A risk may be defined as the probability of the occurrence of shocks and stresses which are either natural (flood, illness and death) or manmade (inflation, violence and unemployment). A risk can be idiosyncratic, that is, not correlated among individuals (illness, accident and theft), collective (correlated such as droughts and epidemics). When correlated they can be repeated (correlated over time) or bunched (correlated with other risks). Risks can also be classified according to their frequency and severity: catastrophic (less frequent but severe, e.g. cyclone) and non-catastrophic (frequent but not severe, e.g. minor illness). The household surveys, PRA exercises and group discussions elucidated a snapshot of the risks in rural livelihoods, which are summarised in the following table 3.

### *Reclassification of Risks*

During household surveys and FGD discussions, villagers illustrated various types of crises they face (reported in Table 3). They classified these crises simply in three broad categories in their own dialect *chhoto* (small), *majhari* (medium) and *borho* (large).

- 1) *Chhoto* (small or micro) crises can be mitigated by self-compensation such as microsavings. Minor health problems such as flu, colds, fever, minor injury by accident, children's demand for pocket money in school, and temporary food shortage at home are examples of micro crisis.
- 2) *Majhari* (medium or meso) crises can be minimised through network compensation such as loans from friends, moneylenders or MFIs. Examples are death of main income earners, land disputes and crop failure.
- 3) *Borho* (large or macro) crises can be moderated or alleviated by institutional compensation such as GO/NGO relief, aid and grants. Big crises are community crises like flood, cyclone and epidemic disease.

**Table 3: Risks and Shocks Reported by the Residents of *Ausha* and *Bhadeshwari***

| Risks and shocks                                       | Percentage of households |      |          |
|--|--------------------------|------|----------|
|  | Extreme poor             | Poor | Non-poor |
| <b><i>Ausha</i></b>                                    |                          |      |          |
| Minor illness (flu, headache, fever, cough, diarrhoea) | 86.3                     | 79.5 | 48.6     |
| Major illness (asthma, blood pressure, diabetes)       | 29.7                     | 24.1 | 38.3     |
| Death, disability or accidents of income earner        | 12.6                     | 6.8  | 2.6      |
| Crop loss, livestock diseases, pests, rats             | 37.1                     | 56.9 | 65.4     |
| Loan default   | 64.2                     | 46.7 | 5.6      |
| Price hike   | 78.9                     | 72.4 | 32.7     |
| Natural disaster (flood, drought, cyclone)             | 7.8                      | 5.3  | 1.9      |
| Conflict and violence                                  | 13.4                     | 2.1  | 0.8      |
| Others   | 43.9                     | 38.6 | 21.7     |
| <b><i>Bhadeshwari</i></b>                              |                          |      |          |
| Minor illness (flu, headache, fever, cough, diarrhoea) | 93.2                     | 87.3 | 65.8     |
| Major illness (asthma, blood pressure, diabetes)       | 28.1                     | 22.5 | 33.3     |
| Death, disability or accidents of income earner        | 31.4                     | 16.2 | 9.8      |
| Crop loss, livestock diseases, pests, rats             | 27.6                     | 61.8 | 46.6     |
| Loan default   | 83.6                     | 74.3 | 3.8      |
| Price hike   | 87.9                     | 65.4 | 22.7     |
| Natural disaster (flood, drought, cyclone)             | 17.7                     | 13.4 | 11.4     |
| Conflict and violence                                  | 41.5                     | 34.9 | 10.5     |
| Others   | 45.7                     | 26.4 | 24.5     |

*Note:* Percentage does not add to hundred because of the multiple report of risks by the households

People classified crises into micro, meso and macro based on the magnitude of risks and mode of resilience. However, they also classified crises based on uncertainty of occurrence: (1) *Anticipated* such as children's education and marriage, chronic disease and (2) *Unanticipated* such as crop failure, sudden death of the main income earner, cyclones. They considered the first category as crisis because it required planned action (e.g. mobilisation of savings) without which they might face crisis such as a high interest loan from a moneylender. In FGDs, respondents discussed how they could manage these crises employing various coping strategies including formal and informal financial instruments such as microloans and micro savings. However, they argued that they had weak adaptation abilities for large (macro) crises as microfinance was insufficient and GO/NGO intervention was inadequate.

### **Trends and Seasonality**

In the seasonal calendar, villagers identified seasonal characteristics in their income and employment. In FGDs, they recalled major crisis events in their lives. The most recent event was the political turmoil that started at the end of 2012 and continued throughout 2013. Data collection of this study was held during February–April 2013 in between the *hartal* days. *Hartal* is the most used political demonstration against the government in Bangladesh. Economic, business and social activities of the whole country stand still as people are forced to remain at home in order to protect themselves from the threat of any violence. No transport facilities are available, no production lines are open and people carry out official jobs at their own risk. The prices of essential goods are exceptionally high due to the supply disorder. Although the political demonstrations concentrate in the city areas, they have serious consequences on rural lives. No sales of agricultural products and no purchases of daily necessities in *hartal* make life very challenging. An anxious respondent said, ‘In yesterday’s *hartal* my husband could not go out for earning. Therefore, my loan instalment at Grameen is in default. I don’t know if I can compensate it next week’. The political unrest continued until the end of January 2014.

Respondents recalled recent uneven rainfall in 2012 that caused crop failure in both *Ausha* and *Bhadeshwari*. Some of the respondents argued that this type of *khora* (minor drought due to uneven rainfall) comes every 2–3 years. In these circumstances, agricultural production comes down to low level and food stocks sometimes fall below the survival level. This situation occurs more prominently in *Bhadeshwari*, as it is a mono harvest low land area. Agricultural land in this village normally remains under water for about 3–5 months during the monsoon season. The remaining 7–9 months are risky for the farmers in two ways: extended floods due to heavy rainfall from the monsoon season, and shortened water body for irregular or no rainfall. The former incident may cause late plantation, the latter case may result in dry land, and both events cause low crop production. Respondents in both the villages recalled the two great floods of 1998 and 2004, and a relatively less severe one of 2007. Most of them could also recall the 1988 flood, but only elderly respondents could remember the great famine of 1974 that hit entire Bangladesh.

### **Vulnerability to Poverty**

**Measurement of Poverty:** The study used a qualitative method for poverty measurement in the two villages. At first, PRA respondents identified wealth-ranking

criteria for the households using their own poverty scale. They used three local terms to label household's wealth status such as *Khubgorib* (extreme poor), *Gorib* (poor) and *Dhoni* (rich or non-poor). Finally, the respondents sorted all households into the village in three poverty groups. Poverty rates are the percentage of households in each group. Table 4 shows the poverty comparison in *Ausha* and *Bhadeshwari*. The incidence of poverty is almost identical for the poor group in both villages but different in the other two groups. The head counts of the extreme poor and non-poor are considerably higher and lower, respectively, in *Bhadeshwari* than that of *Ausha*.

**Table 4: Poverty Head Counts in PRA Wealth Ranking Estimates (%)**

| Poverty group | <i>Ausha</i> | <i>Bhadeshwari</i> |
|---------------|--------------|--------------------|
| Extreme Poor  | 12.4         | 32.7               |
| Poor          | 26.5         | 25.8               |
| Non-poor      | 61.1         | 41.5               |

Calculated from PRA wealth ranking exercises. The number of households, n = 226 and 217 for *Ausha* and *Bhadeshwari*, respectively

**Measurement of Vulnerability:** The study used a quantitative method for measuring vulnerability in the two villages. It employed a very simple, 10-question PSs to collect highly sensitive poverty correlates data from sample households. The household score was then converted into poverty likelihood through the poverty index developed by Schreiner (2013). Poverty likelihood is simply the probability of the poor household to remain under the poverty line or of the non-poor to fall below the line. It is used as a proxy estimator of vulnerability for a given group. Table 5 reports the percentage of people who are vulnerable in each poverty group. As expected, it evident from the table that the poor are more vulnerable than the non-poor in both villages. Within the poor category, the extreme poor are most likely to remain below the line in both areas. However, it is obvious that people in *Bhadeshwari* are more vulnerable to poverty compared with those in *Ausha* in all poverty groups.

**Table 5: Vulnerability Profiles of *Ausha* and *Bhadeshwari***

| Poverty group | Vulnerability to poverty (%) |                    |
|---------------|------------------------------|--------------------|
|               | <i>Ausha</i>                 | <i>Bhadeshwari</i> |
| Extreme Poor  | 82.9                         | 91.4               |
| Poor          | 45.7                         | 62.9               |
| Non-poor      | 5.7                          | 51.4               |

Villagers used wealth-ranking exercise to identify poverty group. Vulnerability is calculated using PS estimates and poverty index developed by Schreiner (2013).

The degree of vulnerability can be estimated by using certain thresholds (Rajadel, 2002; Chaudhuri *et al.*, 2002). I used two thresholds in this estimation: relative and stringent. In the former case, I considered the poverty headcount below the upper poverty line for rural Sylhet (i.e. 0.31) as the threshold for low vulnerability. I used conventional 0.50 as the stringent threshold for high vulnerability. Poverty likelihood below 0.31 indicates non-vulnerability, between 0.31 and 0.50 specifies low vulnerability and above 0.50 shows high vulnerability. The poverty–vulnerability matrix (Table 6) indicates that the extreme poor are the most vulnerable in both villages and the condition of the *Bhadeshwari* residents is worse relative to *Ausha*. Considering the overall degree of vulnerability at a village level, it is evident that percentage of households with high and non-vulnerability is relatively higher than that with low-vulnerability in both villages.

**Table 6: Poverty–Vulnerability Matrix for *Ausha* and *Bhadeshwari***

|                           | High vulnerable<br>(HV) | Low vulnerable<br>(LV) | Non-vulnerable<br>(NV) |
|---------------------------|-------------------------|------------------------|------------------------|
| <b><i>Ausha</i></b>       |                         |                        |                        |
| Extreme Poor              | 74.3                    | 8.6                    | 17.1                   |
| Poor                      | 28.6                    | 17.1                   | 54.3                   |
| Non-poor                  | 0.0                     | 5.7                    | 94.3                   |
| <b>Overall</b>            | <b>34.3</b>             | <b>10.5</b>            | <b>55.2</b>            |
| <b><i>Bhadeshwari</i></b> |                         |                        |                        |
| Extreme Poor              | 80.0                    | 11.4                   | 8.6                    |
| Poor                      | 45.7                    | 17.2                   | 37.1                   |
| Non-poor                  | 40.0                    | 11.4                   | 48.6                   |
| <b>Overall</b>            | <b>55.2</b>             | <b>13.4</b>            | <b>31.4</b>            |

Vulnerability is calculated by taking poverty likelihood (%) as a proxy. Thresholds for high and low vulnerability are 0.50 and 0.31, respectively.

In the livelihood context, the condition of *Ausha* is better because of its relatively affluent livelihood opportunities. Residents of *Bhadeshwari* are more vulnerable due to lower assets ownership and limited income opportunities. Their limited capacities make them strategically weaker in confronting crises and utilising external support. Comparative analysis of two villages suggests that there might be a close link between the capacity to combat crises and access to external support such as financial instruments. To examine this issue, the next section focuses on livelihood strategies and external interventions.

### **Livelihood Strategies: Coping Capacity and Resilience**

The livelihood strategies of the households include income generating activities, coping capacity and resilience building in the context of vulnerability to risks. Coping capacity is the strength of a household or community to manage risks using various resources and strategies (Thywissen, 2006). Strengthening coping capacities often builds resilience to bear the impacts of shocks and hazards. Adaptive capacity is the ability of the household or community to learn and manage how to live in a risky environment. While coping strategies are short-term responses to adverse shocks, adaptation refers to long-term changes of a household's behaviour in response to repeated shocks (Davies, 1996). Higher coping and adaptation capacity is associated with lower vulnerability and thus higher resilience to risks (Oft, 2010).

#### ***Income Generating Activities***

The number of people engaged in agriculture is more in *Ausha* (43.4% as primary and 3.1% as secondary job) than in *Bhadeshwari* (27.2% as primary and 16.1% as secondary job). This is because, as previously mentioned, lands in the former village are bi-harvest producing two crops a year, whereas lands in the latter are mono-harvest producing single crop a year. However, recognising that income from agriculture is not sufficient for livelihoods; the residents of *Ausha* seek various non-farm activities such as migration, taxi driving, salaried job and self-employment. Migration is the most popular income diversification option chosen by the people of *Ausha* after agriculture (23.9% as primary and 11.1% as secondary job). Residents of *Bhadeshwari* have more diversification prospects in day labour (44.7%) followed by agriculture and small trading (17.5% as primary and 9.2 as secondary job).

#### ***Risk Management Strategies***

In FGDs, rural people described risk management strategies in the following simple pattern. *Chhoto* (micro) risks such as minor illnesses are manageable through individual compensation including cash at hand or savings in *matir* bank (piggy bank made of clay). *Majhari* (meso) risks such as death of income earner can be compensated by the community or market arrangements including borrowing from moneylenders or MFIs. In case of *Borho* (macro) risks, for example, floods and cyclones, government intervention is more desirable. However, the three poverty groups differ in coping strategy opinions. While the non-poor focus mainly on individual and market-based risk coping strategies, the moderate poor draw on a combination of all strategies. The extreme poor people largely favour government

**Table 7: Income Generating Activities in *Ausha* and *Bhadeshwari***

| Income sources            | Percentage of households |              |              |
|---------------------------|--------------------------|--------------|--------------|
|                           | Primary                  | Secondary    | Additional   |
| <b><i>Ausha</i></b>       | <b>100.0</b>             | <b>100.0</b> | <b>100.0</b> |
| Agriculture               | 43.4                     | 3.1          | 0.0          |
| Day labour                | 8.4                      | 6.2          | 4.0          |
| Small business            | 7.1                      | 4.4          | 0.4          |
| Remittance                | 23.9                     | 11.1         | 0.4          |
| Fishing                   | 0.0                      | 0.0          | 0.0          |
| Others                    | 17.2                     | 12.8         | 4.9          |
| None                      | 0.0                      | 62.4         | 90.3         |
| <b><i>Bhadeshwari</i></b> | <b>100.0</b>             | <b>100.0</b> | <b>100.0</b> |
| Agriculture               | 27.2                     | 16.1         | 0.9          |
| Day labour                | 44.7                     | 7.4          | 2.7          |
| Small business            | 17.5                     | 9.2          | 0.5          |
| Remittance                | 5.5                      | 1.9          | 1.4          |
| Fishing                   | 1.8                      | 8.3          | 1.4          |
| Others                    | 3.2                      | 1.8          | 0.5          |
| None                      | 0.0                      | 55.3         | 92.6         |

Note: Others include salaried job and self-employment including taxi driving, carpentry

interventions. Risk management are associated with three strategies: (1) *risk protection* techniques that help households in accumulating assets as buffer stock, (2) *risk coping* strategies that reduce the magnitude and impact of shocks and (3) *risksharing* arrangements help households to share risk with others (Table 8). These strategies may be *ex ante*, that is, implemented before the occurrences of risks as a precaution, or they may be *ex post* to cope with the risks occurred. *Ex-ante* measures prevent an individual or households from the occurrence or impact of future of risks. *Ex-post* measures release or minimise the impact of risks the household has already experienced.

### ***Risk Protection Strategies***

Risk protection strategies are *ex ante*, that is, before the shocks or hazards appear. Households try to build up assets to cushion against any anticipated and unanticipated risks. Risk protection strategies are built on previous knowledge and experiences in risks and thus they are part of the adaptation and resilience of the households. These strategies are mainly in accumulating assets and diversification of income sources.

**Table 8: Risk Management Strategies in *Ausha* and *Bhadeshwari***

| Strategies      | Informal  | Formal   |   |
|-----------------|---|--|---|
|                 |   | Market-led   | State-run   |
| Risk protection | Savings in cash<br>Savings in kind<br>Income diversification      | Savings in MFIs<br>Savings in banks  | School stipend<br>Pension and grants<br>Agriculture extension |
| Risk coping     | Reduce consumption<br>Borrow informally<br>Sell assets<br>Migrate | Borrow from banks or MFIs<br>Buy medicine from dispensary<br>Private clinic services | Go to hospital or clinic<br>Workfare                          |
| Risk sharing    | Sharecropping<br>Patronage<br>Social insurance                    | Insurance with MFIs<br>Financial and market literacy<br>Adult literacy               | Infrastructure<br>School/college/university<br>Hospitals      |

*Source:* FGD and Author's survey

***Precautionary Savings:*** People save small cash in informal places for instant use in emergencies. Informal savings are held at home, inside *matir bank* or stashed under a mattress. These tiny amounts are normally used for coping with small risks, which villagers call *chhoto bipod* such as minor illness, pocket money for school going children or even weekly repayment of MFI loans. Respondents in the group discussions argued that informal savings are gradually eliminating from rural households mainly for following three reasons: (1) Impatience-informal savings instruments are not effective enough to resist the spending temptation of the family members, especially children. (2) Security-money kept under the mattress or inside the *matir bank* is always vulnerable to theft. (3) MFI instalment-MFIs members have to manage weekly loan repayment and thus no money is left for their *matir bank*.

***Savings in Cash or Kind:*** MFI members in both villages save money in MFI accounts on a weekly basis along with the loan repayment. They prefer flexible savings scheme that allow free withdrawals particularly in an emergency. Inflexibility undermines the risk coping capacity of the members as alternative sources of emergency finance are costly. A few members argued that they are saving money to invest in future so they do not want to withdraw money now. As the non-poor are not eligible for MFI membership, they are inevitably excluded from the rural savings mobilisation. The majority of them do not have a bank account as banks are far away from their residences. Around 23% of the households in *Ausha* and 6% of the households in *Bhadeshwari* have savings accounts in banks. Majority of the account holders receive remittance from abroad. They claim that they use part of the remittance for family expenditure keeping the rest as savings for unanticipated emergencies.

Apart from cash in piggy banks and deposits in MFIs and banks, rural people use physical assets as savings. These savings include productive assets such as trees, livestock, poultry and unproductive assets such as jewellery and household durables. Group discussants reported that savings in kind comes into consideration when cash is insufficient for insulating the impact of future shocks. They redeem these savings for mitigating *majhari* (meso) types of risks including children's education, marriage and serious illness. Households also save in grains to avoid seasonal variations in food prices even though they know that food stock may depreciate due to insects or rat infestations. There is a special kind of traditional savings practice in rural areas of Bangladesh. Women usually save a fistful of rice grain in a jar from the amount decided for cooking. This type of micro savings is called *musti chal* (fistful of grain). In a month, they save a substantial amount of rice that may be converted into cash for various uses including medicine for minor illness, children's exam fees or pocket money, and purchasing goods from mobile traders. A woman in the group discussion says 'Recently, the uses of *musti chal* are not as numerous as in the past. Now, we mostly use the deposit to compensate for weekly instalment deficit'. Both *Ausha* and *Bhadeshwari* residents have similar opinions about the *musti chal*.

**Food Security:** Rural people often face the risk of food insecurity due to sudden crop failure and seasonal variation in food prices. Rural households store food in the granary and consume this throughout the year. A month equivalent of food storage is a food security indicator in mental accounting of the rural people. They calculate how many months they are able to feed themselves with their own food production. In *Ausha*, the average food storage is an 8–10 month equivalent whereas it is a 5–7 months equivalent in *Bhadeshwari* (Table 5). Thus, residents in *Ausha* are more food secure than in *Bhadeshwari*. The calculation of month equivalent contains food consumption plus cash conversion by selling portions of the grain in the market. The cash is used to buy other food and non-food items. Self-sufficiency (at least 12-month equivalent of food storage) is always a serious concern for rural households. They continuously try to increase food production using specialisation and diversification techniques or accumulating productive assets such as land. For many rural households in *Bhadeshwari*, food self-sufficiency is nearly unattainable because of unsuitable agricultural land (mono-harvest low land) and lack of sufficient assets (especially financial assets) to produce more food. They attempt to ensure food security through alternative strategies such as engaging in non-farm income generating activities including day labouring, small trading and

fishing. *Ausha* residents combat food deficiency through self-employment (e.g. taxi driving) and external migration.

***Income Diversification:*** The reduction of risk may be achieved via portfolio diversification of income generating activities. About 37.6% of the households in *Ausha* and 44.7% of the households in *Bhadeshwari* have a second source of income. In addition, about 9.7% of the households in *Ausha* and 7.4% of the households in *Bhadeshwari* have more than two sources of income (Table 7). As land in *Ausha* is bi-harvest, that is, producing two crops a year, farmers practice ‘crop diversification’ by planting different crops in the same plot at different times and ‘plot diversification’ by planting different varieties of crop in different plots at the same time to obtain more output. Some farmers grow vegetables between two cropping. Land in *Bhadeshwari* is mono-harvest, that is, producing single crop a year, thus farmers can only practice ‘plot diversification’. The reason for single harvesting is that the lands are floodplain and remains under water for about a quarter of the year. Intercropping diversification, that is, combining farm and non-farm activities is also possible as farmers have plenty of time between two crops or between sowing and harvesting in single cropping. People in *Ausha* opt for self-employment activities such as taxi driving, and carpentry during off peak time. Residents in *Bhadeshwari*, on the contrary, engage in day labour, small trading and fishing in lean times. Some people temporarily migrate to nearby villages where there is a labour shortage during harvesting time (migration from single harvest region to bi-harvest region).

***Specialisation:*** Although income diversification reduces the variations in income (variance), specialisation increases the expected income (mean value). Residents of *Ausha* and *Bhadeshwari* take training and consultation on HYV seeds, fertilisers and irrigation from the state funded agricultural extension office. As lands in *Bhadeshwari* are low floodplain and mono-harvest, they have been advised to grow deep-water HYV rice varieties and flood tolerant vegetables. *Ausha* farmers have been advised to grow more vegetables in between two crops. To protect from low-income risks, the residents of *Bhadeshwari* are interested to engage in small trading in four bazaars within their range: *Kopla*, *Bhadeshwari*, *Borokapon* and *Zawa*. There is a wetland called ‘*Kuri beel*’ situated in the northeast of the village. This water body gives villagers a fishing opportunity as a secondary source of income (8.4%). *Ausha* residents are interested in specialising in self-employment activities (taxi driving, carpentry) in which 17.2% of the households have primary choice and 12.8% have secondary choice (Table 7).

### **Coping with Risks**

The fundamental difference between the risk protection and coping strategies lies in the *ex-ante* and *ex-post* timing of implementation. Same strategy can be identified as risk protection as well as risk coping. For example, migration for income diversification is risk protection but when an individual migrates after flooding, it is a coping strategy.

**Reducing Consumption:** In order to avoid liquidation of assets in times of distress poor households prefer to reduce consumption, as they know that liquidation is welfare depleting and earn lower sales value in bad times. Non-poor households adjust family budgets to modify consumption. They may avoid high nutrient items such as cheese and butter but they prefer not to curtail the number of meals in a day (compromise quality for quantity). The poor's menu never contains high quality food to curb but they will reduce the number of meals during emergency periods. 'We usually have three meals a day but when there is a *bipod-apod* (crisis) we eat less-may be two times a day or even once', said a poor respondent in *Bhadeshwari*. Similar expressions came from group discussions with the poor in *Ausha*. The extreme poor eat less in both quality (low price, low nutrient) and quantity (2 meals a day) throughout the year. When asked about chicken curry they replied 'Hardly once in a month or when a guest comes to visit and have food with us'. In fact, their food security is low. They have surplus food in store for 2–3 post-harvest months on average. During lean time or crisis period, their food consumption drastically falls in both quality (sometimes, wild food) and quantity (once a day). In short, the non-poor reduce only quality (standard), the poor reduce quantity (number of meals) and the extreme poor reduce both quality (in terms of price and standard) and quantity (in terms of the amount of food and number of meals) of food consumption facing shocks and emergency.

**Use of Savings:** Use of savings is the next option for households in coping with risks. When people face a crisis, they instantly need cash to combat it. Cash at hand, household savings in clay bank, and bank deposits are the main sources of crises time cash for non-poor residents in both *Ausha* and *Bhadeshwari* villages. Sometimes they ask for payback of outstanding soft loan provided to the poor, friends, and family members. As they have bank deposits they do not have to use savings in kind for risk coping. The poor and extreme poor depend more on household savings and savings in kind. MFI members maintain savings with the MFIs but the use of these savings in crises depends on flexibility of the account

that varies by institutions. Inflexibility of savings is a barrier to the use of savings in coping with crisis. In crisis, instant cash is desirable but except for household savings, neither MFIs savings nor savings in kind can guarantee the flexibility and timeliness of withdrawal or encashment. MFI members face a challenging situation. They accumulate or gather household savings to pay loans and savings instalments, but for an emergency, they have to wait for the next weekly meeting or office approval for withdrawal of their own savings. Therefore, they use their savings as a guarantee to borrow money from instant sources, which makes their crisis finance costlier.

**Borrowing:** When a household faces overwhelming shocks, savings are not enough to smooth consumption and absorb shocks. The household's current income falls short of expenditure to cover the crisis spending, and thus deficit financing in the form of borrowing is obvious. The magnitude of deficit finance depends on the level of current income. Non-poor households have very little or no deficit in the event of risks and thus they do not need to apply for a formal borrowing arrangement. They argue that non-interest bearing soft loans (*hawlat* or *karde-hasanah*) from friends and family is sufficient for funding such deficit. For combating severe risks, they may pawn assets (jewellery, land, etc.) in exchange for lump sum money. This system is called *bondhok* in local dialect in which assets are exchanged for money for an indefinite period on condition that when the asset owner is ready to payback the *bondhok* receiver shall return the asset instantly. In case of productive assets, the *bondhok* receiver enjoys the income from the assets. The *bondhok* giver thus loses future earnings. Non-poor households normally exchange non-productive assets like jewellery.

Poor households have a very low level of assets and thus their income flow is too low to compensate emergency needs. They are compelled to borrow even in a credit-constraint situation where a loan is inadequate or costly and creditors insist on repayment under any circumstances (e.g. Deaton, 1990; Carroll, 1992, 2001). Poor people in *Bhadeshwari* are credit constrained as formal microfinance services are inadequate and moneylenders take this opportunity to charge high rates (10–15% per month). MFI members are fortunate to get microloan at 20–25% per annum. Very poor and non-member households have no alternative to borrowing from moneylenders. Zero interest *hawlat* or soft loan is a rare opportunity for them. Respondents in *Ausha* reported that they did not face such situation as the inadequacy of MFI loan was complemented by benevolent non-poor people who always maintained social connections with poor relatives and friends.

There is an interesting credit arrangement between households and grocery shops in both villages. People buy daily necessities from the grocery shop on credit, conditional on repayment as soon as they have cash-in-hand. Normally, rural people have very little or no cash at hand. What they do generally is to sell grains from their food granary when they need cash to buy necessities. They carry out food encashment in intervals, as they know that there is no right place for depositing the cash if they do it at once. Moreover, households hedge against food price variations that are low in the harvesting time and gradually go up before the next harvest. The grocery owners thus inadvertently minimise the risk of food price fluctuations of the households.

**Selling assets:** When households face a series of shocks, liquidating assets is a common way to handle the situation. At first, households attempt to sell non-productive and store value assets including trees, jewellery, and household durables. Non-poor households prefer pledging these assets instead of selling as they have strong assets base to redeem them in the immediate future. If the poor do the same, they may have little chance to reimburse unless they have substantial financial gains in the future. Moreover, in exchange of pledging tiny assets they may not get enough money to compensate the crisis. Therefore, some of the poor and most of the extreme poor households prefer selling of non-productive assets. Respondents in both *Ausha* and *Bhadeshwari* reported that the most useful assets to sell were trees especially bamboo. The bamboo grows abundantly in every homestead and there is a high demand for its use as a raw material for walls, roofs, fences, mats, paddy or rice containers, etc.

Selling productive assets has a negative impact on the future earning capacity of the households. Initial candidates for liquidation include livestock, poultry and farm equipment. Selling bigger assets such as land in times of distress has a devastating impact on household welfare (e.g. Dercon, 2006). Most of the time, extreme poor households sell land when they have no other options. These households then have no alternative to sell physical labour. Many of such households are found in *Bhadeshwari*. The number is relatively less in *Ausha*. Paying the cost of migration is another reason for selling land. People have the expectation that they will be able to repurchase the land when remittance starts flowing in. Sometimes, these dreams break down when fraudulence occurs in the migration process. Respondents of both villages reported such occurrences.

**Migration:** As a part of diversifying income, family members migrate to other villages, towns, cities and even abroad to earn livelihood. They send money to

support their relatives who remain in the village. Migration can take the form of temporary and permanent movement from poor rural areas to rich rural or urban areas nationally and internationally. In *Ausha*, remittances from migrant workers constitute a large part of household incomes. Around 24% of the households in *Ausha* report that remittance is their primary source of income and 11% said it is their secondary source. In *Bhadeshwari*, the percentage remains low at 5.5% and 1.9%, respectively (Table 7). *Bhadeshwari* people have a high tendency to migrate but they reported that they were unable to bear the initial cost of migration and sometimes they became victim to fraud migration agents.

My son went to Dubai last year through a middleman. We sold 0.25 acres of land to bear the cost. In Dubai, he found that the work permit was a fake. He came back and we lost all. Not a single penny left with us, let alone repurchase the land

screamed a vulnerable woman. Another man reported that his son had been living in Saudi Arabia for 3 years but he could not send money regularly because he is not a legal worker. 'On one occasion, he sent money through improper channel but it never reached the time we needed money desperately'. Such remittance problems also occur in *Ausha* but less frequently. However, most of the legal workers abroad send money to help their family to fight poverty and vulnerability. The recipient families reported that they spent a major portion of the money in family expenditures and the rest remained in their bank accounts as precautionary savings. They build or repair their houses, buy household durable goods, invest in productive assets and even start buying luxurious goods to show pride and to earn a good position in the society. They gradually build *pucca* (brick and cement) buildings with bathroom facilities. On top of this, they attempt to repurchase the pieces of land they sold for migration costs and then buy additional land to increase the assets base.

### **Sharing Risks**

Households implicitly share risk by trading accumulated assets with others. They exchange physical (productive or non-productive) assets such as jewellery and livestock for food during bad times (Dercon, 2006). However, with inadequate assets and entitlements (Sen, 1981), individual or households depend on explicit risk sharing arrangements with the community such as sharecropping, patronage and social network.

**Family Formation:** A household is a unique place for pooling resources and sharing risks in many ways: *Firstly*, large households often share consumption risk among members providing low-cost food processing in common kitchen. *Secondly*, household members take care of children, old and sick, provide food and shelter for unemployed and the disabled (Dercon and Krishnan, 2000). *Thirdly*, households pool labour resources to contribute in commonly shared fields to reduce production risks (Fafchamps, 1999). In both villages under study, there are a substantial number of large households indicating the implication of risk sharing arrangements. Nearly 60% of the households have more than six members (57.1% in *Ausha* and 59.1% in *Bhadeshwari*). The number of nuclear families is low in both villages (7.1% in *Ausha* and 8.7% in *Bhadeshwari*). High dependency and child-women ratios in both villages (99 and 461 in *Ausha* and 104 and 609 in *Bhadeshwari*) indicate the role of family in risk sharing.

Marriage is a commitment through which a husband and wife share risks through common resources and household activities. Parenthood is another mutual obligation through which children receive support from parents and in exchange, parents receive old age care and respect. Parents save portion of their income for their children's future (education and marriage). Bequest motives are always active in their mental calculation of land and other properties. Commitment failures were rare in both villages. No evidence of elderly parents being neglected or left alone was found during the survey. In marital status, only 0.2% among males and 1.1% among females were either divorced or separated in *Bhadeshwari*. These percentages were even lower in *Ausha*: 0.0% and 0.1%, respectively (BBS, 2012; village level census data available in BBS website).

**Sharecropping Arrangements:** Sharecropping is one of the major ways through which rural farmers share agricultural risks and smooth output. In the cropping season, farmers need credit and other inputs such as seeds, fertiliser and irrigation (credit and input risks). Two types of sharecropping contracts were found in *Ausha* and *Bhadeshwari*. (1) In *bagi* or *borga* arrangement, landowners provide land and share other inputs with the tenants at the beginning of the planting season. Following the harvest, both parties share 50% of the crop. For example, if a farmer grows 50 kg of rice in a piece of *Bagi* land, 25 kg goes to the landowner. (2) In *logni* arrangement, moneylenders provide cash to farmers at the beginning of the cropping season and take a portion of the output as interest after harvest. The farmers repay the principal amount by selling crops either to moneylender or in the market. In the former case, farmers lose some value as the farm gate price

is always lower than the market price, but then they could avoid transportation risk. Sometimes, the landowner and the moneylender is the same person who provides land as well as credit. Both *bagi* and *logni* arrangements are available in *Bhadeshwari*. However, *borga* or *bagi* system is predominant in the in *Ausha* because of the nonexistence of moneylenders and the availability of soft loans (interest free and flexible repayment) from friends, family and benevolent landowners. In *Bagi*, *Borga* or *logni* process both owner and receiver of agricultural inputs share production and output risks.

**Patronage:** Apart from agricultural risk sharing practice there is another risk sharing relationship between the rich and poor. In this patron–client relationship, wealthier neighbours provide financial and non-financial support to the very poor in exchange for regular labour and other services (Platteau, 1995). Access to credit and transfer of physical assets guarantees the continuation of the relationship as well as risk sharing. Whether such patron–client relationship is redistributive or exploitative depends on the attitude of the patron as the poor clients have very little things to compensate for large contribution of the rich. In addition to labour services, clients may provide other services such as small gifts, transfer of information and political support. A patron may act benign and paternalistic or very stringent in dealing with the poor. In *Ausha*, the patron–client relationship was gentle where patrons are generous in financial and non-financial dealings and the poor are sincere in exchange. Group discussants argued that rich people were always supportive, they never charge interest on financial transactions and sometimes they do not ask for repayment when borrowers are extremely needy. In *Bhadeshwari*, patrons are more professional and they charge interest in financial dealings with the poor.

**Formal Insurance:** Some insurance companies provide micro insurance for the low-income people in rural areas of Bangladesh. Respondents in both villages reported that no such companies were operating in their villages. However, all three MFIs working in these villages have micro insurance programmes. Two types of micro insurance exist. In loan insurance, borrowers have to pay a premium each time a loan is taken. In case a client dies, the outstanding loan is paid off and family of the deceased get the premium back. For life insurance, clients need to pay a premium per year. After a certain number of years, he or she gets the benefits normally a lump-sum. In the case of death before the maturity of the loan, family members of the deceased can use this money in funeral or other necessities.

**Social Insurance:** Rural people share risks through social arrangement such as social network and charity. Apart from patronage-client networks within the village,

there are other networks with people outside the village. People keep close contact with influential persons outside the village such as politicians, local government representatives, merchants, doctors and migrants for financial and non-financial support in case of emergency. These influential persons have family connections in the village. A respondent in *Ausha* said ‘My uncle’s close friend is a doctor in Sylhet. For any health emergency in our village, we seek his advices for what to do and where to go’. A family in this village migrated to UK permanently but they keep close contact with the relatives back home. In *Bhadeshwari*, some residents take fishing as secondary job. They keep close contact with the fishing community of surrounding villages for fishing collectively in two *haors* (wetland or swamps) nearby. Alms giving to destitute and disabled persons are a common practice among the rich families in both villages. There is a humanitarian and altruistic feeling behind the charity. The feeling is generally based on religious obligations. Whenever a beggar comes to a doorstep, a fistful of grains or some coins are given. In FGDs and interview, respondents in both villages argued that these arrangements are well-practised in their communities.

### **Coping Capacity**

Household’s coping capacity depends on the appropriateness of the risk management tools and the strength of the household. Appropriateness is a mixture of the service provider’s ability (coverage and accessibility) to deliver and service user’s capability (timeliness and affordability) to use a particular risk management tool. The strength of a household depends on its actions to recover from loss in the event of shocks and stresses using one of the three strategies: non-erosive, erosive and damaging (Donahue, 2000). Non-erosive strategy includes liquidation of protective assets (i.e. savings) that does not affect the productive capacity of the household. Erosive strategy uses productive assets (i.e. livestock) or liability (i.e. borrowing) that hampers the productive capacity of the household. Finally, damaging strategy leaves only few coping mechanisms at hand such as selling cheap labour. Cohen and Sebstad (2003) reclassified these strategies based on degree of stress associated: least stressful, medium stressful and highly stressful strategies. The analysis of focus group and interviews indicates that there is a close association between these strategies and the vulnerability status of the households. Damaging and highly stressful strategies are usually associated with highly vulnerable households. Moderately vulnerable households normally implement erosive and medium stressful strategies. Non-erosive households use least stressful tools and consequently they are the least vulnerable if not non-vulnerable.

**Table 9: Hierarchy of Risk Management Strategies in *Ausha* and *Bhadeshwari***

| <b>Non-erosive and least stressful</b>          | <b>Erosive and medium stressful</b>   | <b>Damaging and highly stressful</b>      |                |
|---|---------------------------------------|---|----------------|
| Modify consumption                              | Reduce consumption                    | Drastically reduce consumption            |                |
| Use informal and formal savings                 | Use savings in kind                   | Borrow at usurious rate                   |                |
| Borrow from friends and family at zero interest | Borrow from formal sources            | Sell large productive assets such as land |                |
| Work more hours                                 | Sell non-productive assets            |   |                |
| Exchange or pawn assets                         | Sell or exchange of productive assets |   |                |
|   | Migrate to abroad                     |   |                |
| <b>% of Households by coping capacity</b>       |                                       |   |                |
|   | <b>Resilient</b>                      | <b>Weak</b>                               | <b>Fragile</b> |
| <i>Ausha</i> (n = 105)                          | 55.2                                  | 10.5                                      | 34.3           |
| <i>Bhadeshwari</i> (n = 105)                    | 31.4                                  | 13.4                                      | 55.2           |

Resilient, weak and fragile households are equivalent to non-vulnerable, low vulnerable and highly vulnerable households in the villages. At the same time, they are also equivalent to non-erosive, erosive and damaging households, respectively.

Based on the above classification of risk management strategies and degree of stress absorbed, households in *Ausha* and *Bhadeshwari* may be reclassified into three types. (1) *Resilient* households apply least stressful and non-erosive strategies and most of them are non-poor and non-vulnerable in the poverty group; (2) *Weak* households use medium stressful and erosive strategies and most of them are poor and vulnerable; and (3) *Fragile* are those extremely poor households that have very limited risk management tools in their portfolio (Table 9). They use severe strategies such as selling land and thus become highly vulnerable to risks. Resilient households have the capacity to utilise the household resources without undermining the productive capacity and without seeking much help from the outside. Households become weak when they start selling protective and productive assets and borrow from formal and informal sources. They also start depleting formal savings and thus affect future investment and earning capacities. Fragile households have very limited number of strategies left in the portfolio and eventually they have a tendency to sell productive assets as a last resort, that is, land. To survive, they sell land part by part to pay for family necessities and gradually become destitute, even selling the shelter accommodation they have to become homeless. One of respondents in *Bhadeshwari* experienced this ultimate fate due to a legal dispute over a murder.

***Risk Management in Ausha and Bhadeshwari:*** The household surveys and group discussions with residents of *Ausha* and *Bhadeshwari* revealed that non-poor

residents are more resilient than the other two groups in both villages (Table 10 and 11). They used non-erosive strategies to combat risks and shocks without depleting the assets base of the households. Poor households used asset depleting or erosive strategies but they depended more on non-productive assets such as jewellery or household items. They sometimes pawned these assets to obtain lump sum money to fight risks and shocks. The extreme poor people were more likely to use damaging strategies that involved liquidation of productive assets such as land. Consumption smoothing is a common technique for all types of strategic categories. Consumption modification, that is, reduction of consumption by quality of food in terms of price is commonly experienced by the non-poor group in both villages during bad times. Most poor people apply reduction in quantity of food such as less number of meals a day. However, a drastic reduction, that is, combination of reduction of both quality (in terms of nutrient such as raw food) and quantity (meals per day) is the last resort for the survival of the poorest.

Residents of *Ausha* are more inclined to the strategy of taking help from friends and family among the resilience strategies (Table 10) whereas *Bhadeshwari* people increase the hours of work (Table 11). This is because the social network in *Ausha* is very strong and job opportunities for day labourers are greater in *Bhadeshwari*. In the case of weak strategies, households in *Ausha* were found to use less asset depleting strategies than those in *Bhadeshwari*, where selling non-productive assets is a dominant strategy. For fragile strategies, it was obvious that *Bhadeshwari* people were more inclined to moneylenders who charge high rates of interest for financing the risk coping arrangements of the poor.

The immediate impacts of risk events on households are loss in income (flow) and depletion of assets (stock) and the need for cash to combat those risks. The long-term repercussion of this is the redistribution of household assets needed to smooth income and build an assets base. Risk management strategies of the household may have impacts on its coping capacities, e.g. more assets depleting strategies weaken the coping capacities of the household. Thus, there is a positive, if not direct, relationship between a household's assets base and ability to deal with risks. The greater the level of assets, the stronger the coping capacity and lower the level of vulnerability (Cohen and Sebstad, 2003).

### **Adaptation and Resilience Building**

Adaptive capacity is a long-term account of the coping capacity that includes the ability of a household, community or society to learn and manage how to live and

**Table 10: Major Risk Management Strategies by Poverty Groups in *Ausha***

| Strategies                                | Percentage of households |      |          |
|---|--------------------------|------|----------|
|   | Extreme poor             | Poor | Non-poor |
| <b>Resilient strategies</b>               |                          |      |          |
| Modify consumption                        | 10.8                     | 8.8  | 35.9     |
| Use informal and formal saving            | 7.1                      | 14.1 | 31.3     |
| Taking help from friends and family       | 12.7                     | 26.3 | 32.5     |
| Exchange or pawn assets                   | 5.4                      | 12.9 | 27.1     |
| Work more hours                           | 8.6                      | 6.7  | 2.2      |
| <b>Weak strategies</b>                    |                          |      |          |
| Reduce consumption                        | 10.5                     | 8.3  | 3.4      |
| Use saving in kind                        | 9.5                      | 13.1 | 20.8     |
| Borrowing from formal in informal sources | 11.6                     | 14.6 | 7.7      |
| Sell non-productive assets                | 15.6                     | 24.1 | 5.0      |
| Sell or exchange productive assets        | 18.4                     | 15.8 | 8.3      |
| <b>Fragile strategies</b>                 |                          |      |          |
| Drastically reduce consumption            | 8.1                      | 3.5  | 1.3      |
| Borrow at usurious rate                   | 0.4                      | 0.3  | 0.2      |
| Sell large productive assets              | 4.6                      | 2.7  | 0.1      |

*Source:* Author's survey, 2013

Percentage does not add to hundred as households report multiple risk management strategies. Some respondents, who did not face any crisis during the reference period, remained non-responsive. Reference period is 1 year.

adapt in a risky environment. Adaptive capacity refers to the changes in a household's behaviour in response to repeated shocks and to the institutional setup, which influences the risk coping behaviour (Davies, 1996). Adaptive capacity is thus based on knowledge and experience of long-term actions for combating risks. This has behavioural impact on current risk coping strategies. For example, experiencing routine occurrences of floods and droughts that affect agricultural production, the people of *Bhadeshwari* have now developed a tendency to take multiple job opportunities to smooth income fluctuations. In lean time, they take apprenticeship in non-farm jobs such as carpentry, house construction, collective fishing and small trading. After a certain period, when adequate skills and experience is acquired, they either opt for full time employment in those activities, or have a part time arrangement in crisis periods or in leisure time between sowing and harvesting. Poor and unskilled people choose day labour as an extra earning source

**Table 11: Major Risk Management Strategies by Poverty Groups in *Bhadeshwari***

| Strategies                                | Percentage of households |      |          |
|---|--------------------------|------|----------|
|   | Extreme poor             | Poor | Non-poor |
| <b>Resilient strategies</b>               |                          |      |          |
| Modify consumption                        | 5.7                      | 12.2 | 27.6     |
| Use informal and formal saving            | 8.2                      | 15.9 | 25.2     |
| Taking help from friends and family       | 2.5                      | 6.7  | 12.5     |
| Exchange or pawn assets                   | 1.5                      | 7.8  | 14.7     |
| Work more hours                           | 21.5                     | 22.1 | 10.8     |
| <b>Weak strategies</b>                    |                          |      |          |
| Reduce consumption                        | 21.6                     | 17.8 | 5.9      |
| Use saving in kind                        | 11.9                     | 14.4 | 12.6     |
| Borrowing from formal in informal sources | 23.7                     | 17.9 | 8.1      |
| Sell non-productive assets                | 25.5                     | 28.5 | 11.9     |
| Sell or exchange productive assets        | 14.3                     | 17.3 | 6.9      |
| <b>Fragile strategies</b>                 |                          |      |          |
| Drastically reduce consumption            | 13.4                     | 6.1  | 2.8      |
| Borrow at usurious rate                   | 9.8                      | 5.8  | 1.9      |
| Sell large productive assets              | 8.3                      | 4.8  | 1.5      |

Source: Author's survey, 2013

Percentage does not add to hundred as households report multiple risk management strategies. Some respondents, who did not face any crisis during the reference period, remained non-responsive. Reference period is 1 year.

in bad times. The people in *Ausha* also apply income diversification techniques to adjust long-term fluctuations in income. They attempt to earn from taxi driving, house construction and carpentry. As Sylhet city is close to *Ausha*, some people commute there for a salaried job. Moreover, people have a general tendency to migrate as they have observed that people working abroad have changed the lifestyle of their family back home through remittances.

## CONCLUSION

The study focuses on two villages called *Ausha* and *Bhadeshwari* located in the northeast region of Bangladesh. Using participatory methods and quantitative evidences from primary and secondary sources, the study provides a comprehensive understanding of risks and shocks facing the rural households. The analysis also provides useful information on household strategies to combat those crises.

Residents in both villages have classified *Bipod-apod* (risks) in their own terminology as *Chhoto* (micro), *Majhari* (meso) and *Borho* (macro). Rural people manage *chhoto* crises such as minor illness by individual efforts and *majhari* crises such as land dispute with the help of community or external interventions. However, they expect government funding to mitigate *borho* crises such as floods, and cyclone. The livelihood strategies include income generating activities, risk management strategies and the role of institutions in the context of vulnerability to risks. Income generating activities in *Ausha* and *Bhadeshwari* are agro-based which are not sufficient for livelihoods. Particularly for *Bhadeshwari*, agricultural production is low as lands are mono-harvest, that is, producing a single crop a year. To avoid income risk from low production, residents of both villages diversify income in various non-farm activities such as migration, salaried job, small trading, fishing and day labour. Households develop coping and adaptation strategies to manage risks using various resources. Strengthening the capacity often needs resilience building through self-efforts and/or institutional interventions in order to nullify the impacts of shocks and hazards.

Under the risk management arrangements, rural people have three types of coping strategies: (1) risk protection such as accumulating assets and diversification of income sources, (2) risk coping such as reducing consumption, selling assets and borrowing and (3) risk sharing such as sharecropping and patron-client relationship. Coping capacity depends on the appropriateness of risk management tools and the strength of the households. Considering risk management tools, three types of household exist in *Ausha* and *Bhadeshwari*: (1) non-erosive, (2) erosive and (3) damaging using, respectively, protective assets, productive assets and last resorts (i.e. selling cheap labour) for survival. In terms of strength, households are reclassified into: (1) resilient, (2) weak and (3) fragile. Resilient households use resources without undermining their productive capacity and without seeking outside interventions. Households become weak when they start selling productive assets and borrow from external sources. Fragile households sell productive assets, that is, land and gradually become destitute. They have no alternative but to seek grants, relief and aid from the government and NGOs. The study focuses on vulnerability context and coping strategies of rural households in Bangladesh. The key question is ‘Are those strategies effective in a household’s resilience to risks and shocks?’ It remains as a future research agenda.

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