



Acclimatizing Women and Building Resilience to Overcome the Risks to Females and Migration: Strategies to Ameliorate Vulnerability Following Climate Disasters

Anwara Begum*

Bangladesh Institute of Development Studies (BIDS), Agargaon, Sher-e-Banglanagar, Dhaka, Bangladesh
E-mail: anwarabids@gmail.com

Abstract

The Government of Bangladesh has emphasized streamlining movements into the national development plans under the Sixth Five Year Plan as well as in the Vision 2021, and the Perspective Plan of Bangladesh. Overall, GoB plans strive to enable all forms of migration with focus on better utilization of human resources and an inclusive agenda. Improved Migration Policy would be aimed at supporting labour migration from disaster affected areas for enhanced livelihood and improving migrant worker's employment conditions in semi-rural or urban destinations; providing for reasonable and more efficient labour absorption in growth foci, for creating enabling environment en-route towards a more conducive form of migration, overcoming distress episodes, and focusing on planned movements, internally.

Construction of flood shelter segregated for women, and those that are distinctly separate from that of men is highly relevant in a closed and conservative society like rural Bangladesh.

Explore options for insurance and other emergency preparedness measures to address increase of cyclonic disasters.

It is important to provide drinking water for the living and assist in burial of bodies in flood affected areas; reports abound about the harrowing experience of having known people's bodies floating out of their graves. It is highly traumatic and families have to spend money on wooden caskets, which then have to be held down with boulders, under water.

Key Words: Government of Bangladesh, Labour Migration, National Development.

PAPER/ARTICLE INFO

RECEIVED ON: 21/03/2023

ACCEPTED ON: 25/04/2023

Reference to this paper should be made as follows:

Begum, Anwara (2023), "Acclimatizing Women and Building Resilience to Overcome the Risks to Females and Migration: Strategies to Ameliorate Vulnerability Following Climate Disasters", *International Journal of Trade and Commerce-IJTC*, Vol. 12, No. 1, pp: 91-114.

*Corresponding Author

DOI: 10.46333/ijtc/12/1/8

1. INTRODUCTION

The Government of Bangladesh has emphasized streamlining movements into the national development plans under the Sixth Five Year Plan as well as in the Vision 2021, and the Perspective Plan of Bangladesh. Overall, GoB plans strive to enable all forms of migration with focus on better utilization of human resources and an inclusive agenda. Improved Migration Policy would be aimed at supporting labour migration from disaster affected areas for enhanced livelihood and improving migrant worker's employment conditions in semi-rural or urban destinations; providing for reasonable and more efficient labour absorption in growth focii, for creating enabling environment en-route towards a more conducive form of migration, overcoming distress episodes, and focusing on planned movements, internally.

In Bangladesh, the funnel-like, wide Ganges-Brahmaputra Delta formed by the mighty rivers, being geo-physically attuned, attracts the often, exacerbated torrential Monsoons, cyclones and tidal surges. This delta developed by sediment-laden rivers, is highly sensitive to alteration in the catchment area, the marine environment and sea-level rise (Auerbach et.al. 2015; Islam 2010). It is also prone to fluvial flooding and storm surges.

Migration that is triggered by disasters or massive flood surges could result in involuntary movements that are unplanned and detrimental to livelihoods leaving the affected, highly dependent, on aid. This emerges as a truism for vast multitudes living in the deltaic belt of Bangladesh. The need to save lives and property during times of disasters stipulates that migration be undertaken, to stave off starvation until livelihoods are restored. It degenerates into becoming a lasting or integral part of their struggle for survival, in times of distress when water is stagnated for long periods as witnessed after Cyclone Aila. Embankments could be in need of monitoring and supervision and communities require to be mobilized. If policies are in tandem with the needs and reflective of peoples' commitments then it could be successful. However, where people are excluded in the decision-making for sustaining of policies, if strategies do not echo the particular constraints of certain segments of the population especially women, (who are an integral part of families' care and community's conscience), policies remain untapped.

The adaptive strategies of poor population occupying the Bengal delta, is fraught with problems: the disaster shelters, land-use management, household coping tactics are frequently rendered gender insensitive. Climate change often creates systemic, pervasive or surprise change, making household's coping ability, especially of the women, inadequate - thus failing to increase the resilience of migrant households (Seto 2011; Fusella et.al. 2015).

There is a need to study impacts of sudden floods and storm surges, associated vulnerabilities, loss of livelihoods, process of migration, coping capacities and strategies. What are the influencing factors for water and cyclone-led deluge that could foster migration, whether the options are different for the same set of families (where perception plays a vital role), and how does it differ in case of men and women. These factors have to be analyzed - in a context where migration is by now a recognized household adaptation response to cope with environmental and economic change. However, there is evidence of other factors that tend to cushion the impacts of floods and which could also deter the decision to migrate. Analysis, for and against the discourse on such migration, exists in the literature. Inadequacy to understand the underlying reasons (for

the purpose of policy formulation) may perpetuate vulnerability in another area with varying impacts on men and women.

There is ample justification to assess the manner of migration from the meteorological-prone districts Koyra to Chittagong (as destination area), through survey (Quantitative) and Qualitative (participatory) methods. There is also an imperative to understand the change (s) due to flood disasters and associated vulnerabilities, renewed capacities and strategies. Moreover, one would need to probe the links for identifying factors that improve households' resilience and economic state and, finally the attempt at deriving policy recommendations for improving impacts of migration (suggest appropriateness) and its role as a coping strategy, especially for women.

2. OPPORTUNITIES AND CHALLENGES OF THE BANGLADESH DELTA PLAN

A large consortium, led by consultancy firm Twynstra Gudde, had signed a contract for the development of the Delta Plan for Bangladesh 2100 (BDP2100).

The government of Bangladesh, in cooperation with the government of the Netherlands, aimed to create the Bangladesh Delta Plan 2100. The Delta Plan would integrate planning from delta-related sectors and from all across the country to come to a holistic plan for the Bangladesh Delta. The Delta Plan has been grounded in a long-term vision of the Delta's future. This long-term vision, combined with the use of scenarios, allows planning to be adaptive and dynamic by constantly taking into account uncertainties in future developments in e.g. climate change, socio-economic development, population growth and regional cooperation.

Bangladesh is the largest delta of the world. Its rivers and floodplains, which make up 80% of the country, support life, livelihoods and the economy. Bangladesh is a rapidly developing country, envisaging to be a middle-income country in 2021. The country faces major inter-related delta challenges in water safety, food security and socio-economic development and is prone to natural calamities such as floods, cyclones, and droughts. There is already high pressure on the available land and water resources in the delta.

The Bangladesh Delta Plan 2100 is formulated through a process that is adapted from the delta planning process as used in the Netherlands. The Netherlands and Bangladesh are faced with highly similar challenges in terms of water safety. Key elements of the delta planning process include the conduct of baseline studies, the outlining of a delta vision and scenarios, the creation of a delta framework for delta governance, the iterative selection of delta strategies, the formulation of an investment plan and a program for capacity building. The plan will find immediate applicability through the working out of a set of short-term no-regrets measures as input to the Bangladesh government's 7th Five-Year Plan for 2016-2020.

The BDP 2100 is strategically focusing on six Hotspots: Coastal Zone, Barind and Drought-prone Areas, Major Rivers and Adjoining Areas, Haor Region, Chittagong Hill Tracts and Coast, and Urban Areas.

The plan has been developed in a novel and ground-breaking manner, taking longer term development and climate change issues into account. A key element is to address uncertainty about the future. Some key concerns, especially on issues of compliance with UN SDGs, national visions, and political commitments, are important considerations. As a dynamic country,

Bangladesh is not free from uncertainty or challenges in new frontiers. Concerns are: Will climate change cause more droughts, more floods, and more cyclones and inundate one third area of Bangladesh? Will the population grow to 200 million or 250 million by 2050? Where will their food come from? Where will they live? Bangladesh Delta Plan 2100 embraces scenarios, which outline what the conceivable state may emerge for the country. To draw up efficient and effective implementation plan, considerations need to be given on solid strategic approaches, which are to be embedded in empirical knowledge. To support exchange of experiences, share knowledge, and jointly build capacities for the implementation of the Bangladesh Delta Plan 2100, evidence-based papers are needed. Matching first-hand experience of lives in this dynamic delta and the coping strategies adopted by stakeholders to the plans and policies that have been chalked out is of prime importance now.

This present study combines knowledge (document review) with first-hand knowledge about the coastal areas' coping capacities (South Bedkasi in Koyra), role of hill-tracts in livelihood enhancement (Aziznagar in Bandarban) of migrant families affected by disasters (recipients of relief as well as social networks), can, in an inclusive manner, provide a window of perspectives. There are new opportunities herein to support government plans, implementing of policies, informing knowledge institutions and civil society organizations to highlight needs of cyclone affected Aila populations who continue to battle inimical environment and face livelihood challenges at local levels.

3. OBJECTIVES AND RESEARCH QUESTIONS

The objective of the study is to appraise the impacts of climate change on livelihoods and understand the coping mechanisms and capacities of affected communities to adopt or avoid migration. Probe which factors influence migration decision (over a long period), and the way it differs for men and women.

This paper attempts to inform a better way of implementing existing policy, where there is an imperative to address the needs of Aila affected people, especially women, who face new risks in their communities. The relevance of such a paper emanates from addressing the top-down approaches of assistance that do not percolate to the most deserving, and strategies that could be formulated and accepted (by them) so as to minimize future risks.

This research has studied the following issues for contextualizing responses within existing milieu, delineated below:

- The Government of Bangladesh has emphasized streamlining movements into the national development plans under the Five-Year Plan(s) as well as in the Vision 2021, and the Perspective Plan of Bangladesh, towards an Upper Middle-Income State. Attaining SDG Goals: 10.7 and 10.7.2.
- Rationally enough, migrants try to minimize risks to their livelihoods, in times of stress or structural inequities (IOM- World Migration report 2012; Auerbach et.al., 2015; Begum 1999 and 2017), by movements that would optimize their chances of survival. Given situations that auger threats to their lives, often, whole families are forced, coerced or involuntarily motivated to shift to safer places.

- Climate change often creates systemic, pervasive or surprise change, making household's coping ability, especially of the women, inadequate.
- There is a need to study impacts of sudden on-set natural events, associated vulnerabilities, loss of livelihoods, process of migration, coping capacities and strategies; the influencing factors for water and cyclone-led deluge that could foster migration, whether the options are different for the same set of families (where perception plays a vital role), and how it differs in case of men and women.

3.1 Policy Concerns

There are intermediate to long-term individual responses to conceivable hazards, anticipated to differ for various socio-economic backgrounds and for men and women. Thus, it is imperative to explore the Gender Perspective. It is important to study the constraints of human and capital saving and asset in an affected region spanning decades. Also, to study factors influencing men and women's responses to disasters. Gender friendly livelihood options and Coping mechanism(s) of the farm-worker families, in these different settings, information on before and after the disaster, will allow important insights from this study.

3.2 Major Research Questions

The two important questions that need to be probed are the impacts of hydro meteorological disasters (Cyclone Aila) on livelihood patterns of affected people and especially women. Moreover, whether migration has been an effective option for women to overcome their crises.

3.3 Policy Relevance of Conducting this Study

The Government of Bangladesh has formulated the National Social Security Strategy (NSSS) as a part of its commitment towards reducing poverty, improving human development and reducing inequality. It was approved by the cabinet in June, 2015. Its main aim is to lower the impact of the risks faced by the poor and vulnerable people of the country and thus it includes programmes that specifically focus on the youth, women, elderly and people with disabilities. Although the NSSS provided useful guidelines on social security, its stand on disaster management and mitigation is not yet formidable in the sense of implementation possibilities.

Through the NSSS, the government aims to align disaster management with social security. The NSSS contains many a program for Disaster Management. Disaster Risk Mitigation Programs' main aim is to lower the sufferings of disaster victims by providing them with a loan to set up small business. Other than that, the National Disaster Management Policy (2016-2020) has been undertaken by the government and many acts like the Disaster Management Act (2012) and Cyclone Shelter Construction, Maintenance and Management Policy (2011) was formulated.

But the question could be posed, especially among the affected, as to how effective have they really been?

One thing the NSSS has excelled at is to consolidate at reform of food security, food transfer programs and coordinate with the food stocking policy. They have strengthened OMS to serve food security needs with the addition of vulnerable group feeding, test relief food and gratuitous relief.

The Cyclone Shelter Construction, Maintenance and Management Policy (2011) is a very robust one as it provides valuable insight on how to use and design cyclone shelters, selection of location for building cyclone shelters, repairing and maintenance of cyclone shelters and the responsibilities of the local disaster management committees while dealing with cyclone shelters. The responsibility for ensuring proper management of all cyclone shelters located in a particular District is vested with the District Disaster Management Committee. The deputy commissioner is to ensure proper sanitation, safe drinking water, lighting facilities of the cyclone shelter. However, the current scenario of the cyclone centers is not as it should be. The women, children and the elderly suffer from the lack of proper sanitation, everyone is cramped up for space and there is an extreme shortage of the basic facilities needed. A culture of male domination persists in times of refuge in these shelters.

In every natural disaster, the women, children, elderly and the people with disabilities are the ones who suffer the most. They suffer for the lack of basic necessities. The NSSS provides a robust plan for the welfare of the said group of population, detailed in Appendix.

4. SURVEY DESIGN, INSTRUMENT AND DATA

The study is informed from both Quantitative and Qualitative Data Sources, based upon data gathered over a period of three months from both Destination Area as well as Origin. Here, the results from qualitative data, on account of insights into livelihoods and options, has been mainly utilized.

4.1 Sampling in the Study

This is an important study which combines both Qualitative and Quantitative methods and thus it is important to discuss the basic notions underlying the empirical exercise. This study mainly focuses on how the Aila stricken people coped with the aftermath of Cyclone Aila, with or without migration. This is a qualitative study with a sizeable (459) quantitative structured questionnaire, which are additional study variables.

4.2 Target Population

Aila stricken people (i.e. for whom we want to generalize our results), with a view to inform policy formulation: both documented and in future strategies of policy implementation. In essence it is an attempt to elucidate grass-roots evolving needs to make policy making more cogent.

4.3 Sample

We will build a sample of size 'n' with storm stricken people who migrated. We do not have any sampling frame (complete list of all migrated people from which we can draw sample), as our population size (N) is unknown, thus making it a hidden/rare population.

4.4 Sampling Design

In this scenario we cannot use any standard probabilistic sampling method like Simple Random Sampling (SRS), Stratified Sampling, Cluster Sampling and Systematic Sampling because our population is hidden (i.e. total population size (N) is unknown). Here the Snowball Sampling is appropriate, which is a non-probabilistic sampling scheme. It is mainly used in qualitative study

where population size (N) is unknown and no sampling frame is available or infeasible to be built. This method is also called Network sampling or referral sampling. This method is actually based on link-tracing mechanism. In Snowball sampling one interviewee gives the researcher the name of at least one more potential interviewee. That interviewee, in turn, provides the name of at least one more potential interviewee, and so on, with the sample growing like a rolling snowball if more than one referral per interviewee is provided. It actually finds out sample unit through networking. The first interviewee is called 'seed'. It has several important advantages that make it an attractive approach in many situations. Perhaps, most importantly, it is a relatively efficient method for locating hard-to-find individuals. In many settings, snowball techniques can also be deployed to collect data very efficiently.

5. QUALITATIVE DATA AND SURVEY DESIGN

In the initial months, beginning from August 2018, through January 2019, a Scoping Study was conducted in Aziznagar Upazila, Bandarban District of Chittagong Division. Using all resources available, local networks, administrative officers, service providers and NGOs working in that area, 33 (Thirty-Three), Cyclone Aila Affected migrant families from Koyra were identified through Sampling to meet Saturation Attainment. As this study is focused on Aila and its impacts upon livelihoods of people, the sample respondents constituted a rare population. This in itself was a challenge. There was an urgent need to sample a sizable number of people and understand their particular constraints for formulation of implementable policies. There was inadequate logic to include unaffected people in sampling process as our target population = affected people of those areas (for which we will generalize the results, at that point).

Over a period of three months, insightful questions were administered (enclosed, in the Appendices), National Identification numbers, Asset and livelihood conditions ascertained and phone numbers were collected. A short, structured questionnaire was developed and administered to understand the situation of these migrant Aila affected people. They formed the basis for the subsequent sample respondents in Koyra. This population had also suffered serious destruction from Aila but unlike the Gabura respondents (near the embankment) received less relief and had to cope more in the ensuing years. Thus, our sample was drawn from this population who have tried to cope over a longer period. This study has thus capitalized on the adjustments made by vulnerable population for almost ten years, and thus policy making could be more sensitized to understand their particular needs especially those who were recipient of relief for limited time.

More important issues for this study emerged from their recounts of Cyclone Aila's devastation and subsequent individual families' responses over the last one decade. An added advantage here was the choice of destination respondents who had managed to recoup and even improve their socio-economic condition without public assistance. The tracing of their kith and kin in origin areas allowed a lens into their coping mechanisms. Their challenges, decision-making and recouping of losses, the networks developed therein, their resilience etc. were video-taped and studied. They provided information of more families who had stayed back in Koyra and thus, there was scope to conduct a Snowball Sampling empirical survey. The size of the sample from this Snowball Sampling Framework is robust and dependable.

Following a Network Sampling Framework, based on information from thirty-three families, a hundred and twenty additional links were procured. The second stage thus, was planned through this process, derived from Aziznagar, Chittagong, for Sampling through Snowball Sampling Method.

Here the Snowball Sampling is appropriate, which is a non-probabilistic sampling scheme. It is mainly used in qualitative study where population size (N) is unknown and no sampling frame is available or infeasible to be built. This method is also called Network sampling or Referral Sampling. This method is actually based on link-tracing mechanism, and effective in case of rare population survey.

For the Second Stage of this study, a *two-stage sampling* strategy is being utilized, where, in the *1st stage we randomly chose the villages (Linked to Scoping Study)* and in *2nd stage we used Snowball Sampling (SS)* to draw sample from each selected point of contact. How many respondents we may choose could be determined by sample units, from selected respondent's network by SS using SATURATION concept of Qualitative study.

In snowball sampling we initially drew few people who were affected, and they referred us to other affected people until SATURATION was attained. This method is feasible for us as our population is a rare one (low chance of getting affected ones using SRS or other Probabilistic methods).

Koyra is divided into two parts (South and north); most of our respondents are located in the 7th Number South (Dakkhin) Bedkasi, Koyra, and Khulna. There are seven villages in 7th no. Dakkhin Bedkhasi Upazilla Koyra, namely;

- (a) Angtihara
- (b) Golkhali
- (c) Jodshing
- (d) KachaKhali
- (e) Mullapara
- (f) Ghorial
- (g) Choranka

The focus was to interview those families which have suffered from Cyclone Aila.

Distance among these villages up to 1-5 km, for an Example, distance between Angtihara to Golkhali is nearly 3km. There is no vehicle, so use of Motorbike was recommended and imperative, because of road construction (Muddy) in Bedkhasi Upazilla.

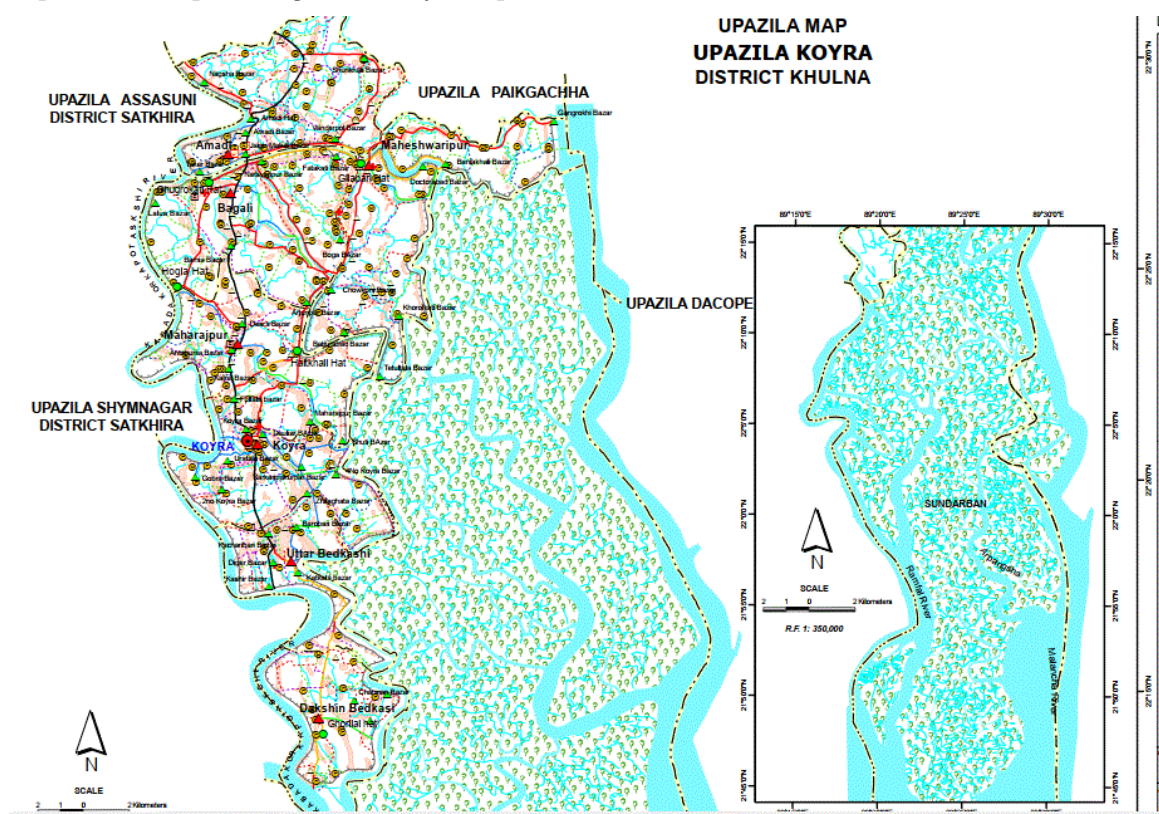
We were able to achieve other respondents by phone call, via Angtihara's respondents' Referral. The Pilot Survey took place using this Referral from Aziznagar, Chittagong. A total of 8 Interviews were done to ascertain the questionnaire focus as well as orient the Surveyors, acquainting them with the information collection and validation process.

First of all, while commencing the Final Survey, the team reached Koyra on the 20th of March 2019, then focused on 7 villages, travelling by motorbike, and then they created another Local Map by walking and discussing with listed respondents' Network to increase the size of the sample size, until saturation point was achieved. A total of 459 respondents were interviewed.

Eleven FGDs were conducted (enclosed in Appendices) to glean the state of Aila affected peoples' coping responses. Six Female Headed Households' Interviews were done, in Khulna. Thirty-Three Case Study Interviews were conducted initially in Chittagong. The combined number of documented information that was collected, stands at 509 (Total of Five Hundred and Nine Interviews).

6. LINK TO IDENTIFY THE SURVEY LOCATION

https://en.wikipedia.org/wiki/Koyra_Upazila



<https://www.google.com/maps/place/Dakhin+Bedkasi/@22.2194884,89.2796521,8810m/data=!3m1!1e3!4m19!1m13!4m12!1m4!2m2!1d90.3521259!2d23.8002083!4e1!1m6!1m2!1s0x3a01c9f09676f30b:0x664a7cb0b483cff0!2sDakhin+Bedkasi!2m2!1d89.3142466!2d22.2454006!3m4!1s0x3a01c9f09676f30b:0x664a7cb0b483cff0!8m2!3d22.2454006!4d89.3142466>

<https://www.google.com/maps/dir/23.8002083,90.3521259/Angtihara+Mosque/@22.2331128,89.3490579,10177m/data=!3m1!1e3!4m16!1m6!3m5!1s0x3a01b5a494bf3c5f:0x703106ac3e0dacb1!2sAngtihara+Mosque!8m2!3d22.2200013!4d89.3419975!4m8!1m1!4e1!1m5!1m1!1s0x3a01b5a494bf3c5f:0x703106ac3e0dacb1!2m2!1d89.3419975!2d22.2200013>

6.1 Methodology comprised of triangulation of information to elicit in-depth knowledge. The Qualitative Exercise for this study comprised of Focus Group Discussions, Key Informant Interviews and Case Studies. On the spot information from the respondents where 10 to 12 Aila affected people gathered, revealed the state of affairs. Some KII respondents also gave relevant information. The issues that came to the forefront were livelihoods, education of children, food security and health. The affected population found that they often had to forgo treatment due to distance to the nearest health center. They would need to visit Koyra Thana Health Complex if medical assistance was absolutely imperative. The cyclone had caused havoc, but people's innate ability to re-coup from devastations allowed them some hope. They believe that "Aila" had caused them misery for some length of time, although it could not bring into effect any change of occupation, permanently. Ways of generating additional income became limited. For example, income from cultivating fruits and vegetables, rearing livestock has been declining lately, while the scope for employment is more or less similar.

As the dams were damaged by Aila, water flowed in continuously and created a stream or "khal", with great depth over the once useable land around the "beel" or swamps. Hence, income generation from those lands came to a standstill.

6.2 Summarizing the Findings from the Qualitative Survey, the following results came to the forefront:

- I. The respondents said that they did not get any warning before Aila, and could not foresee this storm would be so devastating. They realized that the village was getting flooded, from their neighbor, as the dam broke at 8.30 am (during Aila the WAPDA dam broke in three different places on the day Aila wreaked havoc). As there is no proper electric connection in this area and most houses run on solar energy, not many people have TV. Some men heard it on radio. Some opined that not getting a proper warning has caused the most damage. If they were informed even 2 hours before the storm, the loss of life could have been minimized greatly. There would not have been as many injuries and they could have at least carried their basic necessities and valuables with them.
- II. There were no shelters/centers in their area and the dam was about 2 miles away: the main barriers were: distance to the cyclone center, distance to the dam, the current, storm, not getting the warning on time and not getting any instructions on where to take shelter.
- III. Most of the respondents said that Aila washed away homes and their livelihood, loans piled up and husbands went away from the village to find work. This mainly included working at a brick mill. But during Aila they also pulled rickshaws, carried sand and did miscellaneous works.
- IV. Aid works: financial, health and education programs were being carried out by many organizations. However, there was no option but to migrate due to past loans and hopes of starting their lives afresh. Absence of husbands: missed out on a lot of works and projects such as road repairing. Also relief that could be received from many organizations could not be availed due to lack of information.

- V. Women would take another person with them and go to remote places to defecate. They used to drink less water so that they don't feel the need to use the washroom during daytime.
- VI. Everyone's solar panels got ruined so volunteer organizations came forward with soaps, old clothes and kerosene lamps. Failing which, the neighbors used to help out.
- VII. Women used to consume less food, while males were apportioned more. If at times there was no food at home, then the neighbors would help out. They used to cook once in the whole day with twigs and leaves, in the morning.
- VIII. Diseases increased manifolds during Aila. Fever, cold, coughs used to be there constantly. The kids frequently suffered from diarrhea and loose motion. If the fever got too high, water was poured. The elderly suffered the most. One mother died along with her kid from their area got washed away with the tide. Many pregnant mothers gave premature births due to the stress and fear, and some kids died in the wombs because of the physical injuries faced by the mothers during the storm. Salinity caused hypertension, eclampsia and females were distraught during menstruation, lacking all support.
- IX. If any elderly person was ill, women took care by looking after them, washing their clothes, providing them with food, tending to them, 24 hours.
- X. Incidents of people falling into the water while on their way to the shelter and plummeting to their deaths also happened. The ones who held onto thorny trees during the storm injured their arms and legs. Many dead bodies of the people who were taken away by the current were found, floating on the water.
- XI. The respondents said that irrespective of gender what they really want is that the dam be repaired properly with bricks and cement. Also, creating sluice gates in definite points so that fishing can be done in those areas. Saline water needs to be maintained and taken care of by the government.
- XII. Women opined that cyclone shelters be built on needs' based manner; conducting a survey on how many male and female are resident and then build toilets accordingly; two motorized tanks to be established for drinking water; increasing the height of the roads that connect to the cyclone shelter; establish hospitals according to different areas and providing better pharmaceutical services; training women and creating more work opportunity for them.
- XIII. For the children, they would like to have the following: a vocational school in the area, where educational programmes would also include entertainment; food for education and providing free educational materials; ensuring that everything required for child treatment is available in the hospital.
- XIV. Elderly want proper and free treatment at hospitals, special stairs in cyclone shelter to enable the disabled too and more allocation of old age allowance (Tk.1000) for all old people.
- XV. Each and every family did not get the materials needed to rebuild their houses; some missed out, and they needed money to begin anew; even the organizations who provided loans were not eager to provide loans to them. Again, the ones who had previous debts were excused of the repayment installments for the next 3 months. But after the 3 months

- they had to repay the loan with installments again. Hence, they were pushed further into financial risk. Some migrated in distress, to earn a living.
- XVI. Several respondents added to this by saying that most of the pressure fell on the women. They had to take care of everything at once including going to the bazaar, which was stigmatized and some women felt embarrassed at the thought of going to bazaars. Hence, the children or neighbors had to go to the bazaar which used to cost more for the family. Hence, they had to settle for cheap low-quality food, the cooking was also of low quality, hence the health of women and children deteriorated. They had to go to sleep as soon as darkness fell, because of the lack of security. As their husbands weren't there they couldn't protest if their neighbors showed lust, even.
- XVII. The respondents asked for road and infrastructure by the government. They also demanded that the WAPDA dam be repaired properly with cement and extended upto Koyra, and there should be a proper path through this dam to Koyra. They think that only then can the hopes and dreams of the people of the area be achieved.

6.3 Land and Other Assets before and after Aila

Respondents gave the following information about Aila and its effects:

Aila washed away all the food, furniture, blankets, and sheets from every household. Trees, farms, homes, everything was washed away by the cyclone. Land was destructed, as many people lost their homes due to river erosion. Moveable and immovable property was devastated, while poultry and livestock have been washed away completely, as well as gold and cash, including infrastructure. As the schools were being used as shelter homes, the regular schoolwork was not carried out properly, and this situation has still continued to be inimical. Since the roads are flooded, the students could not attend school on a regular basis.

Health problems have escalated since Aila. Skin diseases in the palms, feet, and faces are now commonly prevalent among the general people. Children and their mothers are suffering from malnutrition. Eyesight problems have increased a lot.

Each Aila stricken family had been provided with Taka. 3000 worth of rice for six months by the government. World Vision repaired the roads and tried providing proper education through the food for education program, while water purifying tablets were provided. A work for money program was set up for the women to rebuild roads and houses. Extremely poor families were provided with home rebuilding fund and a 20,000 BDT provision. Tube-wells were made higher and stronger, and bottled water was provided. A tabular form of the effects of Aila has been provided in the Appendices.

6.4 A Glimpse at Coping Strategies

During the floods, they took shelter on the embankment, where they had to cook on make-shift cooking stoves made of tin or mud. Stoves had to be raised on wooden stills so that it was still possible to cook despite the rising waters. The floating leaves, twigs, wood, scraps etc. were the main sources of fuel. Kerosene was used very rarely for lighting and cooking purposes because of the paucity of resources, often prohibitive for them at that time. Later, with relief and other aid, the availability of lighting material and source of energy continued to prove difficult for most. During the deluge, a 7 month-pregnant woman was tied to the upper branches of a tree, by her

husband. She had to be kept there for two days after which a boat was found to take her to a shelter. People took shelter on nearby trees to save themselves.

Many would live on boats for a long time, cooking, bathing and using river water for household purposes as well as toilets. Women would have to spend days wearing the same clothes, soaked and saline. This would cause several types of mental and health problems. Some families moved to relatives' homes in different regions.

For meals, there was relief food which would be rationed to last for a longer time.

During the night, in the midst of darkness and surging waters, women used the embankment precipice for toilet. Many had lost their lives, so women and children would tie a rope to stumps to save themselves. Their toilets on the embankment were also of a temporary and unsanitary nature. Some hanging toilets were made on the road side after the waters subsided.

During floods, raised tube-wells are life-saving. NGOs have established raised tube-wells as part of their programs. "Jhar Bristi Bonya, nai kono Bhabona, Aache uchu paikhana".

Rain water would be collected systematically, to provide drinking water, while they were on the embankment. Later, when they find it difficult to access water from ponds, rivers or broken tube-wells, they collect rain water in containers for drinking purposes.

Households made high benches within their homes, raised their beds on bricks, or stayed on the roof for conducting their household chores until the water would recede. Then they would go to toilets that were on raised platforms, using the bamboo bridges, leading to the toilets.

6.5 Amenities

Embankments were built to be stronger by the Islamic Relief. There was dearth of pure drinking water. During the tide, the waters beyond the embankment allowed some basic needs to be performed. Toilets were hanging and unsanitary. High bamboo platforms were built by affected people to live on for many months. Many families took refuge on the roof of School buildings.

Nowadays, these embankments are muddy and very narrow. In some places these embankments have broken, allowing the saline water to encroach into the homesteads and rice lands. It does not allow any plants to grow except the "Koroi" plant. It is useful but inadequate for holding the top soil together.

NGOs and other organizations including government distributed food and other forms of aid. They had to depend on aid for many months.

People have requested that tube-wells be built. They have to procure drinking water from a long distance. They also want trees with spreading roots. Then, the environment would arrest the soil from being washed away. The present soil, salinity and water-logged state is not conducive for plants.

7. CONSTRAINTS AND CHALLENGES OF WOMEN IN COPING WITH DISASTERS

7.1 Gender Inequality and Vulnerability to Natural Disasters

Gender dimension of climate change vulnerability can be understood through the role of women and men in family and society. Changes in crop, fishery, poultry and livestock production due to climate change could severely impact the livelihoods and well-being of women and their children

because women's participation in paid work outside home is low in South Asia, especially in Bangladesh. Social assessments and institutional analyses that include gender-based experiences in collective actions and support from local institutions or networks, are important to understand gender differential in vulnerability at the time of developing inclusive strategies for increased climate resilience. In addition, a gender sensitive analysis is also important to plan for full and equitable recovery in the case of frequent climatic events such as floods and cyclones. Women's participation in long term climate change adaptation strategies, which might have been constrained due to the traditional social norms in Bangladesh, is important where gender sensitive analysis is a prior requirement.

As discussed earlier, women are more vulnerable than men generally to all kinds of disasters and climate-related impacts due to gender inequalities in various social, economic and political institutions. Generally, women have very limited access to natural resources and information. "When cyclones and floods hit Bangladesh in 1991, the death rate for women was almost five times higher than men" (Huq and Aires, 2008). It happened because many women were not allowed to leave their homes without a male relative, and simply waited for their relatives to return home and take them to a shelter or safe place. On the other hand, in saline and drought prone areas where fresh water is in short supply, women have to take the responsibility of collecting water and supply it to their families. So they are often forced to walk long distances for this purpose. Even in the hilly areas of Bangladesh, women are responsible for collecting water and firewood for family consumption throughout the year.

7.2 Understanding the Coping Experiences

Defencelessness varies across areas constructed on topographical positions, forms of calamities and victims' gender. In 2002, Nelson et al. reviewed the impacts of long-term climate change on agriculture, ecological systems, and gender intra-household decisions. The results from their secondary data context analysis scrutinized intuitively, revealed the information from documents and academic evidence-based papers, to cull out the essence of the research inquiry. The patriarchal milieu of women and their preclusions in society, in developing countries are the main reasons for inimical coping strategies adopted by females in areas affected by environmental degradations and natural hazards. Recovering from natural hazards is often a prolonged struggle for them.

In May 2009, Cyclone Aila hit the same southwest coastal zone areas that were affected by the smaller cyclone Bijli in April 2009 and devastated by cyclone Sidr in November 2007. Aila killed 193 people, but it displaced more than 297,000, and severely damaged infrastructure, institutions, crops and cultivable land, causing a huge influx of saline water into agricultural land and fresh water areas. Sudden and slow onset environmental hazards impact vulnerability of people in different ways. Thus, voluntary and involuntary relocation is one of the outcomes (Cerneia 1997, Warner et al. 2010). This is an outcome of limited anticipatory planning: women, children, elderly and disabled may become trapped and exposed to impoverishment and increased vulnerability at far higher levels. Neither do women have the opportunity to move out. Nor so they have an acceptable livelihood in their established homelands. This solicits a clarion call for rights-based

national plan to assist people directly impacted by climate change and other environmental hazards;

During the tropical cyclone of Bangladesh (1991), almost 90 percent were females, who lost their lives. Poorer the populace, more susceptible to rapid onset of environmental change and hazards, plus children and poor women. At the time of climate hazards some gender specific attributes (such as societal attitude, cultural values, mental stress, inimical state of reproductive health, responsibility for children, guarding home and hearth, stagnant saline water increases risk of abortion, miscarriages, deformation of babies, fits and pressure etc.) intensifies females' vulnerability.

7.3 Options for Migration and Policies that Endorse Movements

The Government of Bangladesh has emphasized streamlining movements into the national development plans under the Five-Year Plans as well as in the Vision 2021, and the Perspective Plan of Bangladesh. Rationally enough, migrants try to minimize risks to their livelihoods, in times of stress or structural inequities, by movements that would optimize their chances of survival. Given situations that augur threats to their lives, often, whole families are forced, coerced or involuntarily motivated to shift to safer places. Climate change often creates systemic, pervasive or surprise change, making household's coping ability, especially of the women, inadequate. Therefore, there was a need to study impacts of sudden on-set natural events, associated vulnerabilities, loss of livelihoods, process of migration, coping capacities and strategies, the influencing factors for water and cyclone-led deluge that could foster migration and whether the options are different for the same set of families (where perception plays a vital role) focusing on gender dimensions.

Based on international evidences; Karim and Noy (2016) argued that it is perhaps even more important to look at the medium to longer-term differentiated impacts of natural disasters as these natural events could have regional consequences that can persist for decades. The aspect of gender dimension has been one of the top priorities for the Bangladesh government in all of its national development plans. However, to what extent these policies, particularly the gender aspects has been accepted by the beneficiaries themselves, whether female members of the households are facing specific constraints or whether specific communities require any further assistance; these constitute the major aspects of our policy aim from this study.

In the light of addressing the policy goals; our research design encompasses inclusion of not only the migrated households but also the non-migrated households to understand whether migration has been an adaptation response after a natural shock. Our justification is impacts of the Aila hazard and longer-term recovery of the affected households through adoption of numerous coping strategies at various time periods before and after the disaster, aimed to elicit insights that would then represent their needs, in the light of government's existing policy responses.

The findings from this study show that the longer-term recovery of agricultural income and expenditure (i.e. higher agricultural income and expenditure in the current time period) of the non-migrated households has been significantly better compared to the migrated households who are found to adopt other coping measures as well in addition to involuntary migration to adapt with super cyclone Aila. Policy wise, this finding plays a very important role to justify people's

voice over government's existing policy responses over migration. To justify this specific insight drawn from this study, Table 3.1 exhibits the households' perception about the government activities which they thought could have made losses from Cyclone Aila minimal. The top three government initiatives that have been highlighted by both the migrated and non-migrated households are Boundary Wall or "Bandh" renovation and construction (29.36% vs. 29.02%), Cyclone surviving High roads construction and renovation (17.86% vs. 15.57%) and More Cyclone shelter (14.23% vs. 13.46%) respectively. In light of the gender-differentiated impacts of the Aila shock, this study further justifies gender-friendly livelihood diversification options.

Table 3.1: Household Perception about the Government Activities to Minimize Cyclone Affected Losses

Government Activities that could make Cyclone Affected Losses Minimal (%)	Migrated Households	Non-migrated Households	All Households
Boundary Wall "Bandh" Renovation and Construction	29.36	29.02	29.27
Need more Hospitals	7.16	4.75	6.5
Remove Saline water and Reduce Soil Salinity for Agricultural Development	7.16	4.75	6.5
Cyclone Surviving High Roads Construction and Renovation	17.86	15.57	17.23
More Cyclone Shelter	14.23	13.46	14.01
Create Job Opportunity	5.85	6.07	5.91
Financial Support	3.73	5.8	4.31
Forecast	5.65	4.49	5.33
Recover Lands from Canal Developed by Aila	0.3	0.53	0.36
Reduce Corruption in Relief Distribution	1.21	1.85	1.39
Tubewell- Source for Pure Drinking Water	2.22	3.96	2.7
Suppressed Pirates in Forest	0.3	0	0.22
Relief	1.31	2.37	1.61
Electricity	0.5	0.79	0.58
Tree Plantation	0.71	1.32	0.88
House Building	1.21	3.43	1.82
More Educational Institutes	1.21	1.32	1.24
Stop 'gher'	0	0.26	0.07
Help in Livestock Farming	0	0.26	0.07

Source: BIDS Survey, 2019.

In lieu of migration, according to Table 3.2, the top government policies that seem to play an effective role for both migrated and non-migrated households are Emergency relief (39.15% vs.



42.29%), Financial support (26.8% vs. 28.45%), High roads and boundary bandh renovation (14.89% vs. 10.67%) and Cyclone shelter (13.19% vs. 11.07%) respectively.

Table 3.2: Household Perception about the Government Policies that Helped most during and Post-Aila

Government Policies that Helped the Households Most During and Post- Aila (%)	Migrated Households	Non-migrated Households	All Households
Financial Support	26.8	28.45	27.25
Emergency Relief i.e. Foods and Others	39.15	42.29	39.98
Cyclone Shelter	13.19	11.07	12.63
High Roads and Boundary Bandh Renovation	14.89	10.67	13.78
Forecast	2.13	0.4	1.67
No Help	1.99	3.56	2.4
House	0.43	0.4	0.42
Old Age Allowance	0.71	0.79	0.73
Help from NGO	0.57	2.37	1.04
Job Opportunity	0.14	0	0.1

Source: BIDS Survey, 2019.

8. DISCUSSION AND SUGGESTIONS

Climate change induced natural hazards disrupt the fabric of daily lives at micro levels. Climate change induced risks are disproportionately carried by those who are basically disadvantaged, socially, economically and sometimes, even physically challenged, also the aged. Knowledge, skills, power relations, gender roles, health, wealth, race, ethnicity, age, physical and (dis) ability shape differential risk and vulnerability levels etc. determine individual's ability to "bounce back." Women try to cope with the altered hydro geophysical condition and suffer the most. Poor women are the worst affected and are among the most vulnerable. A gender analysis would promote an understanding of the ways that men and women are differently impacted by climate driven hazards. Primarily because their adaptation and mitigation needs and modalities are different. These issues have been focused upon in this study.

In deltas, vulnerability will grow and gender specific adaptation options vie for attention (Begum, 2017; Panel Discussion: BRAC/Sanem Conference). Of critical importance are the gender sensitive considerations, which emerge cogently: women combine care-giving with reproductive roles and household chores with income earning. In a traditional milieu, women remain secluded and vulnerable to the impacts of climate change because of strict gender codes of behavior (Begum, 2017; Global KM Platform). Studies reveal the manner in which women cope with their daily work before, during and after the disasters occur. Neither are disaster shelters well planned and designed, to make it amenable for women, nor does a patriarchal society allow women to seek refuge with strangers. These prohibitions make it a second choice for women, who are entrusted with children and livestock. Moreover, salinity causes severe health problems (premature

abortion, post-partum haemorrhage, urinary tract infection, hypertension: where water logged conditions prevail) for women; that could be taken into the analysis of the gendered needs of women, as distinct from men (Begum, 2017; Panel Discussion: BRAC/Sanem Conference).

Migration tendency has increased, hence there is need for planning to enable both destination and origin areas and secure people's livelihoods in origin areas. Social Sector agencies should be able to coordinate to reach the benefits to their program areas in tandem with GoB officials;

It has emerged that roads are damaged intermittently by the surge of waters making travel, income generating activities impossible. Embankments, once collectively maintained by community, within the surveyed villages, are now breached, allowing saline water to encroach and precluding any cultivation of food crops. This is advantages for the shrimp farmers. The embankments are the arteries for movement and thus the poor farmers are rendered inept by the lack of communication. Government officials are often unaware of the state of affairs and repair and maintenance is not executed on time;

The base situation of women's labour market is now inimical following the aftermath of the cyclone Aila and the extended period of water-logging. Labour market transformations have rendered women more vulnerable and hence their remuneration is now being bargained (by the land owners) on a piece rate basis thus lowering their wages further. Marginal farmers and women farmers' needs must be addressed;

Use of army lists to ascertain a beneficiary is recommended, primarily because it tends to maintain standards of who deserves and who do not.

9. CONCLUSION

Women are the primary care giver in the family and she is the main actor for ensuring hygiene, supply of safe drinking water, cooked food for the family, maintain the post processing of all agricultural produce on time, raise poultry and livestock, the courtyard/kitchen garden. Moreover, following a disaster, these women will have to queue in line, pitch in during the physical reconstruction process to safeguard against future ingress of storm or saline water, etc. Thus, this calls for a building of women's strength through more support (increase their resilience and make them more cogent partners), through empowerment targeting their physical, mental, social, economic, political, cultural and intra-households' negotiations in important decision making. The attempt of policies would therefore need to concentrate on developing gender sensitive adaptation to reduce the adverse effects of geo-physical causes of vulnerability, create provision of food supplements, make available in vulnerable regions the provision of medical services, ensure availability of drinking water, raise aware-ness on health, disaster preparedness, local and national provision of support and community support for improvement of their livelihoods.

Social safety protection has to be increased. Simultaneously, there is a need to create awareness among families to avoid credit from money lenders and also to cope with cyclone aftermath. Cash for work should be extended wherever it is feasible; Old-Age Allowance could be universally distributed for deserving old people. Addressing risk and vulnerability in a pragmatic way is the only option for improving the psychological atmosphere so that the victims of cyclones are again able to recoup and engage in livelihood pursuits. All that is needed is a little support in terms of

resilient infrastructure like solid, technologically sound embankments that can withstand the saline water because some research evidences show that poor lose 20 per cent of their assets to crises.

Livelihoods aimed to promote adaptation to coastal fisheries through pisci-culture of salt tolerant fish, coastal a forestation with community focus and ownership, new ways of earning a living, agriculture that can withstand salinity, etc. need to be introduced. Adaptation to agricultural systems in areas prone to flash flooding. Promotion of research on floods and saline tolerant varieties of crops. Information and assistance to cope with enhanced salinity due to saline water encroachment or rise in floods.

Construction of flood shelter segregated for women, and those that are distinctly separate from that of men is highly relevant in a closed and conservative society like rural Bangladesh.

Explore options for insurance and other emergency preparedness measures to address increase of cyclonic disasters.

It is important to provide drinking water for the living and assist in burial of bodies in flood affected areas; reports abound about the harrowing experience of having known people's bodies floating out of their graves. It is highly traumatic and families have to spend money on wooden caskets, which then have to be held down with boulders, under water.

Bangladesh's government has become a model, an example for the world, in disaster management and mitigation. There has been concerted emphasis on restructuring travels of people in response to disasters, into the national development plans under the Five Year Plans, the Vision 2021, the Perspective Plan of Bangladesh, and this has been well articulated in all GFMD Global Meetings. Despite place attachments, cultural and lineage ties, severely affected migrants try to minimize risks to their livelihoods, in times of anxiety or physical imbalances, by movements that would improve their chances of existence. Certain circumstances that are environment related - impinging upon livelihoods, posing threats to their lives, induce entire families to move. This could be construed to be basically coerced or involuntarily motivated.

Climate change often creates systemic, pervasive or surprise change, making household's coping ability, especially of the women, inadequate. Therefore, there was a need to study impacts of sudden on-set natural events, associated vulnerabilities and loss of livelihoods and process of migration, coping capacities and strategies, the influencing factors for water and cyclone-led deluge that could foster migration. The impetus was on conducting this present study. It was more relevant in a context where a super cyclone like Aila, which generated massive relief and assistance, had left a lasting impact: an environment, devastated, with stagnant water and its effect upon the livelihoods. This analysis was more relevant for studying whether the options are different for the same set of families (where perception plays a vital role), focusing on gender dimensions. Moreover, the long-term implications of a cyclone-hit area on migrated and non-migrated households, especially women was very important as a research and policy issue. This has not yet been explored.

Prominence should be given in the NSSS towards the quality and maintenance of cyclone centers. Construction of shelters should be done without political or undue pressure from the powerful. Also, disaster affected structures such as rebuilding dams and roads and their proper maintenance require more importance. The embankments need to be repaired and made durable,

while shelters, roads and bridges must be within reasonable distance. Media has aired the urgent need of “Phoni” affected people who wanted assistance in durable embankment and road construction. A similar need was strongly articulated by the respondents of this study.

The scope of this study exists in realizing the coping strategy of cyclone affected people over a considerable period of time. More often than not, they resorted to their own means of survival, especially on livelihood issues, health and governance difficulties. The onus was on them for taking the decision, to remain or move. Identifying villages from where migrants have moved to the hill district of Chittagong, this study probes the specific challenges of affected populations coping with the aftermath of cyclones. Unlike others similarly devastated, these people have tried to cope as relief was given for only a stipulated period. The population for this survey of 459 households were chosen from the Scoping Study conducted in August 2018. It created an opportunity to study coping methods over a long period, from where policies could be usefully retained.

The context of the Delta Plan 2100 posed a platform which would pursue similar micro-level, in-depth studies to inform time-bound scenarios. The NSSS too was lacking in detailed strategies for different groups, which would require a region-specific implementation plan that would give credence to the document. The NSSS was comprehensive, albeit well-articulated, problems remained; it was yet to be well executed. For implementation in specific areas micro-studies, such as this, were needed. Hence the policies adopted in the NSSS should be implemented as efficiently and as effectively as possible.

Following a disaster, women will have to queue in line, pitch in during the physical reconstruction process to safeguard against future ingress of storm or saline water, etc. Thus, this demands an erection of women’s strength through more support (intensify their flexibility and make them more convincing and useful partners), through empowerment targeting their physical, mental, social, economic, political, cultural and intra-households’ negotiations in important decision making. The attempt of policies would therefore need to concentrate on developing gender sensitive adaptation to reduce the adverse effects of geo-physical causes of vulnerability, create provision of food and physical security.

Disaster shelters are not well planned and intended to make it amenable for women. Moreover, a patriarchal society prohibits women to seek refuge with strangers. These prohibitions make it a second choice for women, who are entrusted with children and livestock. Moreover, salinity causes severe health problems such as premature abortion, post-partum haemorrhage, urinary tract infection, hypertension, where water logged conditions prevail for women.

Women try to cope with the altered hydro geophysical condition and suffer the most especially poor women, who are quite vulnerable. Analysis, especially a gender analysis would help towards an appreciation of the ways that men and women are differently impacted by climate driven hazards. Primarily, because their adaptation and mitigation need and modalities are different. These issues have been focused upon in this study.

In this study, respondents who were Aila affected were posed questions on before, during and after Aila situation of agriculture expenditure and incomes. Results show that although migration of households did occur as a direct response to the magnitude of the disaster, the non-migrated households have recovered, over a longer period. They solicited government and non-

government aid and as a result, even improved their position compared to migrated households. Affected people were found to adopt migration as a survival strategy in response to super cyclone Aila (leading to shock and involuntary reaction), and less inclined to move when struck by other sudden events like floods and land-slides. More than half of the respondents reported they were severely affected by cyclone Aila.

Women's vulnerabilities have been recorded to be more by many studies. Here women's vulnerability has been assessed on migrated and non-migrated families and female headed households. Almost all disasters affected females more, while male members reported that they faced more problems with cyclone Aila, hence this partially explains migration (full households as well as movements of members in stages). Income earning became a priority for males and migration was a feasible strategy but that led to prolonged exposure of females as the detrimental effects of super cyclone shock was prolonged. Likewise, there was a lag and lethargy in aid and assistance and change in policies of maintenance of infrastructure.

This study identified females to be acutely defenseless during disasters and quite vulnerable, physically, mentally, socially, economically and highly constrained in decisions related to care and management of the home. The proscriptions imposed by socio-economic and cultural milieu are often binding and lack of employment opportunities in their immediate vicinity enforces subjugation. Income generating activities, both public and private, need to target women. Women need assistance to help them improve their socio-economic state. Cyclone shelters have to be separate and more amenable for women, especially pregnant, disabled girls and old women. They need to get preference in times of and in the after-math of disasters, and during rehabilitation and relief.

A combination of non-inclusion of community, delayed maintenance of protective embankments, loss of agriculture and income, which led to greater suffering for those who remained in their original homes. All households wanted post-disaster assistance. Islam et.al, (2013), point to the varying levels of vulnerability and lack of livelihood options for some households. These are the households who should be identified for assistance over a longer period, if possible.

An important aspect is that migration does not emerge as a spontaneous reaction in the face of a natural shock. Amongst the Aila affected 459 surveyed households, 332 households adopted migration after being affected by Aila and the other 127 households did not migrate. The FGDs also revealed people's attachment to their own lands as it is closely linked to their identity. Keeping this in mind, sensitive policy could be undertaken to assist people in their original homestead areas. Proper guidance and monitoring on a regular basis should be done.

Despite people's articulation of GoB's preventive measures and early cyclone preparedness, there emerged a consensus that cyclone Aila shock was all pervasive and had longer lasting repercussion. Women of non-migrating households turned to friends and relatives (greater families), for help, during Aila disaster and to GoB support after longer lasting problems persisted. This study has identified the importance of realizing people's perceptions, attitudes and reactions, to be of prime significance. The beneficial/ (and or) detrimental impacts of long-term shocks, persistence of vested interests that could have regional implications; in fact, the whole gamut of governance comes into play once a disaster has touched people's lives and livelihoods. Infrastructural policies (where it is stipulated that government will be solely

responsible for repairs and maintenance, without heed to the community), are often dis-incentives to community solidarity and hence their authority. This results in discouraging people's initiative and sabotage gains for families in need.

The extent of benefits to women (including children, too), who are at risk, the burden of care and chores, was quite an important issue in this study. Thus, coping strategies were sought, following the BCCSAP (2009) which identified women as the primary actors. In this study, women's capabilities, abilities, intrinsic values, their voices were heard on the government's assistance and preferred aid. They requested gender friendly livelihoods with easing of specific constraints and enabling environment for women, in their homesteads as well as in the shelters. This emerged as an important finding in this study.

References

- [1] Agrawal, A. and et.al. (2008). Local Institutions and Climate Change Adaptation. The Social Dimension of Climate Change, No. 113.
- [2] Ahsan, Md. Nasif. (2017), "Can Strategies to Cope with Hazard Shocks Be Explained by At-Risk Households' Socioeconomic Asset Profile? Evidence from Tropical Cyclone-Prone Coastal Bangladesh." *International Journal of Disaster Risk Science*, 8(1), pp. 46-63., doi:10.1007/s13753-017-0119-8.
- [3] Auerbach, L. W. et al. (2015) *Nature Climate Change* 5, pp. 153-157.
- [4] Begum A., Review paper titled, "Review of Migration and Resettlement in Bangladesh: effects of Climate Change and its Impact upon Gender", disseminated on the Global KM Platform and website of the University of Southampton, 2017.
- [5] Begum A., 2017; Panel Discussion: BRAC/Sanem Conference, 2019.
- [6] Canon, T. (2002). Gender and Climate Hazards in Bangladesh. *Gender and Development* Vol. 10, No. 2.
- [7] Caroline Moser and David Satterthwaite, "Towards pro-poor adaptation to climate change in the urban centres of low and middle-income countries," paper presented at the Conference on Urban Poverty and Climate Change Infrastructure and Development, BRAC Centre, 26-28 January 2009.
- [8] Climate Change Cell. (2008). Climate Change, Gender and Vulnerable Groups in Bangladesh. Dhaka: Department of Environment (DoE), Ministry of Environment and Forests, Government of the People's Republic of Bangladesh.
- [9] Dasgupta, Susmita, et al. (2016). "Facing the Hungry Tide: Climate Change, Livelihood Threats, and Household Responses in Coastal Bangladesh." *Climate Change Economics*, 07(03), p. 1650007. doi:10.1142/s201000781650007x.
- [10] Economic and Social Survey for Asia and the Pacific, 2012: page xi.
- [11] Flatø, M., Muttarak, R., & Pelsler, A. (2017). Women, weather, and woes: The triangular dynamics of female-headed households, economic vulnerability, and climate variability in South Africa. *World Development*, 90, pp. 41-62.
- [12] Fussell, Elizabeth, et al. (2014). "Measuring the Environmental Dimensions of Human Migration: The Demographer's Toolkit." *Global Environmental Change*, vol. 28, pp. 182-191., doi:10.1016/j.gloenvcha.2014.07.001.

- [13] Gray, C. L., and V. Mueller (2012). "Natural Disasters and Population Mobility in Bangladesh." *Proceedings of the National Academy of Sciences*, 109(16), pp. 6000–6005, doi:10.1073/pnas.1115944109.
- [14] Haque, Md Aminul, et al. (2013). "Health Coping Strategies of the People Vulnerable to Climate Change in a Resource-Poor Rural Setting in Bangladesh." *BMC Public Health*, 13(1), doi: 10.1186/1471-2458-13-565.
- [15] Huq, S. and Ayers, J. (2008). *Climate Change Impacts and Responses in Bangladesh*. Brussels: Policy Department Economy and Science, DG Internal Policies, European Parliament.
- [16] Islam, Md. Monirul, et al. (2014). "Limits and Barriers to Adaptation to Climate Variability and Change in Bangladeshi Coastal Fishing Communities." *Marine Policy*, vol. 43, pp. 208–216., doi:10.1016/j.marpol.2013.06.007.
- [17] Islam, Md. Monirul, et al. (2013). "Vulnerability of Fishery-Based Livelihoods to the Impacts of Climate Variability and Change: Insights from Coastal Bangladesh." *Regional Environmental Change*, 14(1), pp. 281–294., doi: 10.1007/s10113-013-0487-6.
- [18] Islam, Md. Monirul, et al. (2013). "Vulnerability of Fishery-Based Livelihoods to the Impacts of Climate Variability and Change: Insights from Coastal Bangladesh." *Regional Environmental Change*, 14(1), pp. 281–294., doi:10.1007/s10113-013-0487-6.
- [19] Karim, A., & Noy, I. (2016). Poverty and natural disasters—a qualitative survey of the empirical literature. *The Singapore Economic Review*, 61(1). <https://doi.org/10.1142/S0217590816400014>.
- [20] Karim, Azreen, and Ilan Noy (2016). "Poverty And Natural Disasters — A Qualitative Survey Of The Empirical Literature." *The Singapore Economic Review*, 61(01), p. 1640001. Doi: 10.1142/s0217590816400014.
- [21] Karim, Azreen (2018). "The Household Response to Persistent Natural Disasters: Evidence from Bangladesh." *World Development*, vol. 103, pp. 40–59., doi:10.1016/j.worlddev.2017.10.026.
- [22] Mahabubul, Gazi, et al. (2013). "The Impact of Climate Changes on Livestock Sector: Challenging Experience from Bangladesh." *Asian Journal of Animal and Veterinary Advances*, 8(1), pp. 29–40., doi:10.3923/ajava.2013.29.40.
- [23] Mahmud, Tanvir, and Martin Prowse (2012). "Corruption in Cyclone Preparedness and Relief Efforts in Coastal Bangladesh: Lessons for Climate Adaptation?" *Global Environmental Change*, 22(4), pp. 933–943., doi:10.1016/j.gloenvcha.2012.07.003.
- [24] Mallick, Bishawjit, et al. (2017). "Living with the Risks of Cyclone Disasters in the South-Western Coastal Region of Bangladesh." *Environments*, 4(1), p. 13. Doi: 10.3390/environments4010013.
- [25] Matin, M., Zahan, I., & Rabbani, A. (2017). *Internal Migration as a Coping Mechanism to Natural Disaster: Evidence from Southern Bangladesh*. BIGD Working paper no. 40, BRAC University, Dhaka.
- [26] Nasreen, M. (1995). "Coping with Floods: The Experience of Rural Women in Bangladesh". Unpublished PhD. Dissertation. Massey University, New Zealand.

- [27] National Disaster Management Policy (2016-2020) has been undertaken by the government and many acts like the Disaster Management Act (2012).
- [28] Nelson, V., et. al. (2002). Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations. *Gender and Development* Vol. 10, No. 2.
- [29] Panda, Architesh (2010). "Climate Induced Migration from Bangladesh to India: Issues and Challenges." *SSRN Electronic Journal*, doi:10.2139/ssrn.2186397.
- [30] Parikh, D. J. (2007). *Gender and Climate Change Framework for Analysis, Policy and Action*. India: IRADe & UNDP.
- [31] Paul, Bimal Kanti (2005). "Evidence against Disaster-Induced Migration: the 2004 Tornado in North-Central Bangladesh." *Disasters*, 29(4), pp. 370-385., doi:10.1111/j.0361-3666.2005.00298.x.
- [32] Planning Commission; Government of Bangladesh, "Moving Ahead: National Strategy for Accelerated Poverty Reduction 2009-2011"; GED, Planning Commission, Government of the People's Republic of Bangladesh, May 2008.
- [33] Rahman, Mohammed Ataur, and Sowmen Rahman (2015). "Natural and Traditional Defense Mechanisms to Reduce Climate Risks in Coastal Zones of Bangladesh." *Weather and Climate Extremes*, vol. 7, pp. 84-95., doi:10.1016/j.wace.2014.12.004.
- [34] Saul, B. (2012). *The Security Risks of Climate Change Displacement in Bangladesh*. *Journal of Human Security*.
- [35] Shamim, Tuba (2018), "The Study on Saving Habits of Rural Women's with Special Reference to Rampur", *International Journal of Trade and Commerce-IIARTC*, 7(2), pp. 495-498.
- [36] "Sustainable Gender Sensitive Adaptation in Times of Climate Change", Panel presentation by A Begum (BIDS), at the Sanem Conference, BRAC Center, February 2017.
- [37] Vilasroi, Sonia (2018), *Socio-Economic Empowerment of Women through Energy Accessibility*, *International Journal of Trade and Commerce-IIARTC*, 7(2), pp. 412-418.
- [38] Vincent C., et al., 2019, "Gender, Migration and Environmental Change in the Ganges-Brahmaputra-Meghna Delta in Bangladesh", Forthcoming as a chapter in book by Sage Publication, India.