

Impacts of Climate Change Induced Migration on Gender: A Qualitative Study from the Southwest Coastal Region of Bangladesh

Ishita Shahid Sams¹

¹Institute of Population Research, Peking University, Beijing, China

Correspondence: Ishita Shahid Sams, Institute of Population Research, Peking University, Beijing, China.

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Abstract

The aim of this study is to explore the gender variation of the impact of climate change induced migration. This paper highlights the gender dimensions of climate change induced migration where gender is a vital element for determining vulnerability to climate change which influences the subsequent migration. Actually, the impacts of climate change induced natural disasters are not gender neutral because the experiences, needs and priorities of the climate migrants are varied by gender roles and position. In this research, we explore the socioeconomic impacts of the climate migrants on gender from the evidence of the southwest coastal women and men of Bangladesh. The qualitative data were collected from the cyclone-affected migrants who were migrated internally from the disaster-prone southwest coastal region and lived in the city slums of Khulna in Bangladesh. This study is described the gender differentiation between women and men in case of climate change induced migration according to social, economical, ecological, organizational, occupational, educational and physical aspects which tend to be highly gendered. The study results show that among climate migrants, women are more vulnerable than men due to their socioeconomic condition and gender discrimination in the patriarchal society of Bangladesh who are likely to be poorer, less educated, have a lower social status and have limited access to and control over natural resources.

Keywords: climate change, natural disaster, migration, gender, vulnerability, coastal region, Bangladesh

1. Introduction

Climate migration is largely exposed by people's experience to environmental and climatic risks and their capacity to adapt, anticipate, cope with and recover from the consequences of natural disasters and environmental degradation. Specially, the people who are economically, politically and socially marginalized in the society are more affected by natural calamities and environmental degradation. They have the fewest opportunities to access resources and information for preparing the impacts of climate change and influencing the subsequent probability of migration as migration requires socioeconomic resources and capacities which are not available to everyone. The marginalized groups have fewer opportunities and capabilities to face natural disasters and environmental crisis because usually the poor, the elderly, women, children, and minority group face cultural or religious barriers to migrate (Chindarkar, 2012). Thus, gender is an important element to understand the relationship between gender, vulnerability and migration because it is shaped by social, cultural, economic, political, environmental and ecological factors. A number of empirical studies investigating vulnerabilities to natural disasters from a gender perspective have shown that women are generally more victimized to environmental and climatic risks and more affected for their specific gender roles and responsibilities in family and community (WEN, 2010; Chindarkar, 2012; Gioli, 2012; IOM, 2010).

According to the empirical survey of the London School of Economics, women and children are fourteen times likely to die or be injured in a disaster than men (Eric & Plumper, 2007). For evidence from Bangladesh, ninety percent of women and children were died by the effect of cyclone in 1991 (Aguilar, 2004). Moreover, that empirical survey done by the London School of Economics was identified that women and girls were more likely to be exposed to gender-based violence and trauma where women and girls often lost their homes and shelters due to natural hazards for reducing in economic activities and increasing the workload for survival. In 2008, Dankelman et al. argued that climate change is not gender neutral where children, elders, disabled and women are adversely affected to Climate Change Induced disasters (Dankelman et al., 2008). Moreover, violation of women's rights becomes more prominent during a natural disaster where the ultimate victim of natural disaster is the poor and extremely poor communities among which

women comprising the major percentage are more vulnerable due to their less access, mobility, ownership, and gender-differentiated roles and responsibilities (Nasreen, 2008). Despite the pivotal role of women in household management, participation in decision and policymaking as well as development process are still undermined (Parikh, 2011). Predominant gender inequalities and power differences limit women's ability to respond and adapt to the adverse situation of climate change because the inequities are existing in the everyday life and not just in times of disaster which creates a greater risk for life chances for women and girls. Their vulnerabilities are therefore relatively greater than men's. Basically, the term 'gender' is a socially constructed to distinguish the specific roles and relations between women and men. In patriarchal societies like Bangladesh where women gendered position limits the participation in decision-making processes in family and community level which add to the disadvantage of women in facing the climate-induced disasters (UN-Women, 2015). Therefore, gender mainstreaming is crucially needed in climate change response activities, sustainable and equitable development, a clear focus on adaptation and mitigation, and empowerment of individuals to build their own resilience.

For both developed and developing countries, gender gap between women and men makes women more vulnerable than men to the impacts of climate change (Masika, 2002). As a developing country, Bangladesh is considered as one of the most vulnerable countries in the Global Climate Risk Index (CRI) developed by German watch which informs countries' exposure and vulnerability to climate-related risks. In this sense, Bangladesh has been listed as one of the most affected countries in the period of 1997-2016 (German watch, 2017). Also, the risk of floods and loss of life and property related to floods is highest in Bangladesh (IPCC, 2014). The geographical location of the coastal areas in Bangladesh is dynamic, with their long and densely populated coastlines and many low-lying remote islands have an unsteady and changing patterns' due to erosion and accretion (Shamsuddoha et al., 2009). These coastal areas are characterized by a high pace of population growth and which pushing millions of people living in the low-lying coastal areas (World Bank, 2012). In these coastal regions, extreme floods, storm and tropical cyclone have frequently occurred in the last three decades and affected millions of people (EM-DAT, 2016). The main economic activities in coastal areas are agriculture, shrimp cultivation, fish farm, fishing in river and sea, drying fish, crab business, poultry and livestock, salt farming and so on which are related to the natural resources. Change of the resources for the frequent attack of natural disasters has severe impacts on the livelihood of the coastal area where migration is the common scenario to escape from the adversity of the natural disasters. The women of these coastal areas have less access to education, employment, property, food, health care, etc. (Sutlana & Mallick, 2015). Some evidence suggests that like women, in specific and particular situations, men can be more exposed or victimized to natural hazards because they might be less aware of risks and less ready to take the initiatives for a migratory movement to use social capital (IOM, 2013; Ahsan, 2014; Mallick, et al., 2017). In most of the cases, women's vulnerabilities can be addressed based on the gender inequality, whereas, in the same situation it is also important to crucially consider men's vulnerabilities to integrate the gender dimension for assessing the disaster risk reduction. Indeed, both women and men have particular economic and social disadvantages for their socioeconomic and gender position that can make them vulnerable to climate-induced migration (Chindarkar, 2012).

There is a little focus on how women are affected during and after climate-induced migration in the related article of internal migration owing to natural disasters. In 2014, Ahsan observed the causes of migration with the impacts on the livelihoods of the explosion of climate migrants in Bangladesh (Ahsan, 2014). In 2015, Sultana and Mallick discussed the internal migration owing to cyclone Sidr and cyclone Aila in the southwest coastal region of Bangladesh where migration was one of the adaptation processes for those natural disasters (Sultana & Mallick, 2015). In their study, they found that income constraints prompted families decided to migrate to the nearest city. In 2016, Ahmed et al. described the community resilience to climate-induced disaster in the coastal region of Bangladesh (Ahmed et al., 2016). Mallick et al., narrated the south-western coastal peoples' livelihood vulnerabilities with the risks of cyclone in the same disaster-prone area of Bangladesh in 2017. In their study, they reported that a significant number of poor people were primarily migrated to the urban areas for securing the livelihoods and to maintain their families. They stated that the decision of migration was a coping mechanism for cyclone disasters (Mallick et al., 2017). In fact, most of the existing scholarly articles were exposed the migration as an adaptation strategy for the aftermath effect of natural disasters. Indeed, these researches have been identified an underlying debate about the significance of environmental stressors associated with climate change and the importance of demographic and other resources that influence migration. Some articles have emphasized the importance of environmental stressors that push people into migration, others have emphasized the resources and opportunities that lead to migration, including the constraints and resources of current occupations, family roles, capital, and so on. However, they fail to address the gender-differentiated roles and responsibilities of women and men in response to climate-induced migration and the situation after migration in destination places (Afsar, 2010; Abrar & Azad, 2004).

In Bangladesh, women face exclusively the impact of extreme weather events and natural disasters for their gender

position. The gender relations could be adversely affected by the disaster events to influence the existing gender inequality and discrimination in the society which may interrupt the women empowerment and overall development of a country. In recent time, the Bangladesh government has emphasized on the development of women with gender-sensitive policies, plans and actions (Ministry of Disaster Management and Relief, 2010 & BDS, 2015) and the national policies of Bangladesh concern about the climate change and environmental issues such as Bangladesh Climate Change Strategy and Action Plan 2009, the Climate Change Cell, 2009 and National Plan for Disaster Management (NPDM) 2016-2020 which address the climate change problems (BCCSAP, 2009; CCC, 2009; NPDM, 2016-2020). But there are no clear instructions in these policies and laws how women and men migrants' vulnerabilities will be identified. The vulnerabilities of women owing to the climate-induced natural disasters are often highlighted by the researchers interested in gender and environmental issues (Alam & Collins, 2010; Kapoor, 2011; Moni et al., 2013; Kabir et al., 2016; Bernzen, et al., 2019). However, after migration in response to natural disasters women's position have been overlooked according to their gender role and relation in the society. They disregarded to explain women's conditions after permanent migration due to the slow onset effects of natural disasters basically those who were female-headed family because of divorced, widow or whose husband was temporarily migrated from rural to urban areas due to climate-induced natural disasters. Evidence-based analysis on climate change induced migration is needed to show the pathway for national adaptation strategies under the national planning systems and formulation of migration policies in gender perspective as gender is one of the most important factors shaping the migratory experience because women and men tend to have different migration patterns at every stage of the migration cycle (pre-departure, transit, arrival, stay and return). The pre-migration situation, risk perception and priorities, strategies, choice of destination, employment opportunity, access to integration or reintegration activities also differ by gender (Piper, 2005). It is important to understand that migration can exacerbate existing inequalities between women and men, expose them to new vulnerabilities and intensify gendered experiences of poverty, discrimination and socioeconomic inequality (Jolly & Reeves, 2005). Gender is therefore critically relevant in underlining the causes and consequences of migration. Considering the gender role and position of women and men in Bangladesh, this research tries to focus on women and men's movement from the disaster-prone southwest coastal region of Bangladesh as well as to explore the factors influencing the decision of migration due to the cyclone Sidr and cyclone Aila and to understand their experiences after migration. Moreover, the article assesses the vulnerability of women and men as climate migrants to find out the gender dimension which is rooted in the patriarchal society in Bangladesh. This paper specifically asks: What is the importance of gender basis analysis related to other socioeconomic factors for climate change induced migration? What are the differential effects of climate change induced migration on women and men? How does gender position influence women and men's livelihood vulnerabilities after internal migration?

The following sections of this paper are as: section 2 describes the research methodology, research results and discussions with specific recommendations are presented in section 3 and section 4 draws the conclusion.

2. Methodology

This study is based on qualitative research with exploratory data. For this study, sixty-five people were selected where all but seven were permanently migrated from southwest coastal region in Bangladesh namely, Dacope, Koyra, Paikgacha (sub-districts of Khulna district), Morrelganj, Sarankhola (sub-districts of Bagerhat district), Shyamnagar and Assasuni (sub-districts of Satkhira district) to Khulna City due to the adverse effects of natural disasters. Because this area is one of the most vulnerable areas of Bangladesh in terms of exposure to cyclones, flood, storm surges, sea-level rise, riverbank erosion, soil salinization and other climate change induced environmental hazards. More specifically, the data were collected from fifty-eight migrated people and seven host community people who had specific gender roles and relationships according to their gender position by using purposive sampling technique to fulfil the purpose of the study. We conducted in-depth interviews about thirty climate change induced migrants where twenty was males and ten was females. Moreover, five focus group discussions (FGDs) were conducted where exactly seven respondents participated for each FGD. Three key informants provided information about the respondents who were migrated from the southwest coastal areas. The respondent's age was between twenty-one years to sixty years. Moreover, they had the practical experience to deal with natural calamities as well as sheltered in city slums of Khulna for the adverse effects of natural disasters. They were cordial in providing information about their life experiences before and after migration. For in-depth interviews, we collected data from Gollamari, Baghmara and Mujgunni slums since January to February in 2017. In addition, we conducted FGDs at Labanchara and Notunbazar slums since July in 2017. In our research, a semi-structured interview guide for in-depth interview and a checklist for FGD were developed by ourselves to measure the livelihoods of the climate migrants and their social mobility. To cross check the reliability of the data, we have selected ten respondents from thirty in-depth interviews randomly and re-interviewed them on August in 2017. Each in-depth interview took at least forty minutes. The interviews were recorded and later transcribed from Bengali to English. For focus group discussions, eighteen men and seventeen female participants were invited to discuss specific

aspects of climate change, migration, occupational change, social and economic inequalities, deprivation on the basis of their gender position and conflict with the host community. With a view to finding out the relationship between migrants and natives, we executed another FGD on the cohort of natives that consisted of seven respondents, of which four were female and three males.

We collected nine themes emerged when questions were asked about the impacts of climate change induced migration on the migrated women and men in the study area. These themes include: (i) socio-economic and demographic characteristics of the household members, (ii) information about location and housing system, (iii) household income and expenditure before and after migration, (iv) land and property access and use according to their gender position, (v) food security, consumption and livelihood adaptation as gender perspective, (vi) social interaction and participation with host community, (vii) experience with livelihood vulnerability and causes of migration, including reported experience with natural disasters such as cyclones, floods, waterlogging, salinity and erosion, (viii) gender role and power relation in household and community between women and men of the migrants, (ix) host community perceptions about the migrants. For FGD, participants were invited to discuss specific aspects of climate change, causes of migration, occupational change, income and expenditure, structural inequality and deprivation for gender gap, social interaction and social network, power relation in family and community between women and men, socio-economic position according to their gender role and relation, host community reaction about the migrants which are the important elements to understand the impacts of climate change induced migration on women and men according to their gender position. In every FGD, all participants shared their views without hesitations. Once the field information was gathered, data were coded and thematically analyzed to answer the research questions. Moreover, secondary information was collected from previous literature such as, scholarly articles, governmental, non-governmental and international reports, and policy documents to validate the field observations of this study.

3. Results and Discussions

The issue of gender must be needed to consider the relationship between migration, environment and climate change. Because, the impacts of climate change induced migration vary according to women's and men's distinct roles, responsibilities, access to resources and information, employment opportunities, education, physical ability and security. The discussion about migration linkage with climate change is now widely studied within public, policy and academic realms regarding gender-neutral perspective in climate migration study (WEDO, 2008). The patriarchal norms and values, culture, gender role may limit women's and men's ability to migration. Considering gender into climate migration analysis can help to understand how the gender role and position of women and men influence the decision of migration who are affected by natural disasters or environmental degradation. In climate migration analysis applying the gender issue can help to a more significant understanding of this matter and it is also necessary to address the particular vulnerabilities, experiences and needs of women and men migrants according to their gender position so that the policymakers can make the policies and programs including gender specific objectives and apply it for the wellbeing of climate migrants. It may help to reduce the vulnerability of the affected women and men from environmental risk factors. Because gender-blind policies can propose inappropriate responses to climatic hazards which may less likely to succeed. A gendered analysis is therefore essential to developing the gender sensitive strategies for climate migrants which are fruitfully effective to both female and male climate migrants by reducing existing gender inequalities. Moreover, it will help to assess the different impacts of policies and law on women and men, as part of different social class and groups for ensuring that the actions will not exclude or harmful to other social groups (Warner, et al., 2012). In the results section, we have summarized the collected data and discussed briefly according to the specific research objectives as follows. Pre-conditions of climate-induced migration are explained in subsection 3.1. We have described the answer to the first research question in subsection 3.2, where we clearly have stated the importance of gender basis analysis related to other socioeconomic factors for climate change induced migration. From subsections 3.3 to 3.6, the differential impacts of climate change induced migration on gender are narrated as the answer of the second question. Women and men's livelihood vulnerabilities after migration are probed regarding to their gender position in subsections 3.7 to 3.9, which are the answers to the third research question. Finally, some recommendations are drawn in subsection 3.10.

3.1 Causes of Migration for Climate-Induced Natural Disasters

For the consequences of climate change, the intensity of natural disasters such as heavy rainfall, extreme flooding events, cyclone and salinization of groundwater and soil etc. increases in Bangladesh. In recent years, cyclones Sidr (November 2007) and Aila (May 2009) created major damage in the southwest coastal region in Bangladesh. Another environmental challenge in this area is salinization in groundwater and soil. Additionally, sea-level rise, water logging, riverbank erosion challenges the livelihood of the inhabitants in this area. It is observed from the field data that internal migration is increasingly rising and there is a strong linkage between the sudden onset impacts of natural disasters such as cyclones or tidal surges, flood, river bank erosion. This study revealed that the displaced people initially try to

relocate themselves in adjacent safer urban areas. Most of them are sheltered in city slums or squatter settlements where there is a lack of basic services. A number of push factors had contributed to permanent migration internally from rural area to urban area such as damage to infrastructure after a sudden attack of natural disaster, loss of land property and homestead, lack of livelihood options and decline in alternative income sources, scarcity of food and pure drinking water after natural disaster, lack of cyclone shelters, lack of sufficient assistance from government and non-government organizations, destroy of farmlands and shrimp farms, fail to accumulate livelihood resources after disaster, fear of future attack of natural disasters, waterlogging and salinization in groundwater and soil as slow on-set effects of natural disaster such as cyclone, sea level rise in the affected areas. This research found that climate change induced migration takes place after major extreme climatic events. The affected women and men moved away for the lack of resources and the non-availability of income-generating alternatives. They were also socio-economically vulnerable because of the high rate of poverty and illiteracy according to their gender position, lack of resources, inadequate employment opportunities, loss of income from traditional agriculture-based livelihoods.

In this research, the collected data showed that the respondents were migrated internally for some specific reasons for climate-induced natural disasters. In southwest coastal areas, the poor and underprivileged people, women, elder, children are the most severely affected by climate change impacts. They are basically less able to cope with and respond to natural calamities because of their deprived position. They are socially marginalized, economically poorer and politically unprivileged because of less able to decision-making power individually for the existing gender gap in the society. After cyclone Sidr and cyclone Aila, the affected people displaced for ensuring their economic and social securities. In addition, push factors as well as some pull factors were influenced the people to migrate towards urban areas such as better opportunity for livelihood, availability of unskilled and semi-skilled work, perception of upward socioeconomic mobility in the city, better transportation systems and social networks, and use of mobile phones to remain in contact with relatives in villages.

The time span between extreme climatic hazards and internal rural-urban migration differs for ecological and socio-economic conditions of the affected people. The collected data represented that poor cyclone affected people migrated internally within 3 to 15 days following the sudden attack of the extreme climatic events. People, following Aila, migrated due to having the scarcity of food and drinking water, and losing the land of homestead, agricultural and fish-farm. One of the female participants of FGD-2 mentioned that - *“After Aila, there were severe crises of pure drinking water and food, our children were crying for those, so we went to Khulna City after the third day of cyclone Aila. Moreover, our house was destroyed and we lost our farmland”*.

The primary data revealed that the severe losses and damages due to both cyclone Sidr and cyclone Aila had a direct impact on influencing the decision of migration. After the worse effects of cyclones and insufficient supply of reliefs from GO and NGOs, delay to take essential steps of local government, the hardship of finding a secure income opportunity, weak political support were influenced the affected people to move towards nearby city Khulna. In this study, one of the female respondents narrated that - *“My family did not get any relief from the local government or political parties because we did not go to the cyclone center. We went to our relative’s house during cyclone Sidr and that house was far away from cyclone center. Additionally, we had no good connection with the local political parties”*. The major cause of rural-urban migration is the disruptions of household income and loss of household assets due to cyclone disasters. Basically, the poor households were the most likely to migrate to Khulna City in immediate response to cyclone damage. The poor and landless people were the most likely to migrate for seeking income to the adjacent city such as Khulna which is one of the largest industrial cities in Bangladesh, basically male family members who was the head of the family tried to earn money to fulfil the family needs considering their gender role and responsibility according to the patriarchal society.

Middle-class people tried to restore their assets which were severely damaged by cyclone disasters. For salinization of groundwater and soil owing to the slow on-set effects of climatic events they could not rebuild their fish farm and agriculture lands. Moreover, they could not do any blue-collar job according to their social prestige and status. Then they took the decision of migration to the Khulna City for securing their livelihood. The families who lost their income and land property due to one or more natural disasters, they sold their assets such as gold, radio, furniture, livestock and borrowed money from more than one source to return in normal life. But when these families could not repay their loans, they tried to escape from the economic hardship and migrated from their origin place. So, people were migrated from their origin and took shelter in the city slums of Khulna.

Changing in land use associated with shrimp farming due to salt contamination with land and water and destroyed adjacent farmland for the consequences of flood and cyclone reduced local employment opportunities who were involved with the fish farms as a day laborer. Petty businessmen, van pullers, day laborers, honey and wood collectors faced income shortfalls for lacking work and business opportunities after the cyclones. GO and NGOs did not take sufficient initiatives for reducing the climate vulnerability of the migrants. Furthermore, the respondents could not able

to get the benefit of the social safety net program of the government of Bangladesh.

Climate-induced natural disasters are not the main key driver of migration but the short-term and long-term effects of natural disasters on socioeconomic life of the victim women and men associated with poverty influence the people for migration to secure their livelihood and reduce their vulnerabilities. The study identified that the men respondents migrated responding to gender role and position to gain cash income with their own decisions but women were migrated with their families depending on their families' decisions. Female respondents including three widows and a divorced migrated with their own decisions to the influence of their relatives who were lived in Khulna City. One widow respondent told that - *"After the end of relief work, I had no alternative way to go to the Khulna City because I lost my husband by the sudden attack of cyclone Aila. My husband was a fisherman and during the cyclone Aila, he went to the sea to catch fish. My husband's boat washed away in the Bay of Bengal. My elder brother insisted me to come in the Khulna City. At that moment, my only son was fifteen years old and in my village, there was no opportunity to earn money so we migrated in the Khulna City. Now I am a housemaid and my son works as a rickshaw puller."*

3.2 Gender Dimensions of Climate Change Induced Migration

Climate change associated with natural disasters affect women's and men's assets and well-being differently in terms of agricultural production, food security, mental and physical health, water and energy resources. Women's unequal access to land property, natural resources and other productive assets which limit their mobility and decision-making to migration. Because women and men experience different vulnerabilities to climate change that gives them unequal access to resources and information. The gender position plays differently in diverse of societies depending on local cultural and social norms and values that entail gender roles, age, class and ethnicity. The loss of livelihood and lack of securing economic resources are indeed triggering the respondents to take a migratory plan.

After migration both male and female migrants faced the constrain for surviving. But female respondents were more vulnerable than male respondents because migration was strongly tied to gender relations and women would be particularly vulnerable to climate change impacts. From the research results, it was clear that most of the female respondents were poor, less educated and they had a lower health status, less access to natural resources or ownership of assets compare to male respondents. Urban settlement as an adaptation process is not uniform across women and men. In patriarchal society women's adaptation processes are severely challenged by gender relationships and depended on power structure both within the household as well as within the community. Here we have mentioned the three female participants' experiences after migration in Khulna where one was widow and another was divorced. One female respondent described her vulnerable position that -

"I had no relatives in the Khulna City and no friends either. We did not know where to go and at that moment, I had not enough money to pay house rent. That's why, we took place on the railway station with others. Then my husband managed a room in Gollamari slum. Now I am a housemaid and my husband is a ship-breaker but we do not have permanent jobs; so our hardship does not end after migration. Though I earn money, I cannot spend it without the permission of my husband."

The widow participant of FGD-2 narrated that - *"I am a widow and I have three children. My husband was died by cyclone Aila because at that moment, he was on the river to catch fish. We were in danger following the death of my husband. We had no land property and my son was too little to work. My brother who lived in Khulna encouraged me to go to Khulna. Then I came to the city with my children. Now I am a housemaid and my son pulls rickshaw in this city. When I was the only bread earner, there was no limit to our sufferings. But, at present, we can live hand to mouth."*

Another female participant added that - *"My husband did not have any work after Sidr as he was a day labourer; so he decided to go to Dhaka and I with my two children stayed in our village. But after migration to Dhaka my husband did not contact with us, we tried to contact him but failed, as we did not know his address. I was a seamstress and I had to maintain my family with my little income. Nine months after going to Dhaka, he sent me the divorce letter and I knew that he again got married in Dhaka city. At that moment, my son was sixteen years old and he came to the Khulna City for seeking a job and finally managed to work as a van-puller with the help of his uncle. After five months we came to Khulna to stay with my son. Now I am a seamstress and my monthly income is about 3000 BDT."*

The above statements represent the fact that without kinship and social network support by host community, the adaptation process of women in destination place was more difficult. Moreover, divorced or widowed female migrants faced more obstacles to deal with the hazards in the city than the married female migrants. The female headed families have no adult male family members who could earn money for the family and the female migrants had the less opportunity to find a squire job as well as shelter. At that adverse situation they had to take on new roles and responsibilities of bread earner and they were not prepared both psychologically and physically. Household level differences in food distribution, low nutritional status, low productivity, less economic freedom, less education, weak social network, poor economic status show the gender inequality of the female respondents which refers to downward

socioeconomic position of them. Moreover, the breaking of social ties and separation from the relatives had a negative impact on climate-induced female migrants.

3.3 Economic Impacts of Migration on Gender

The availability of various capital assets shapes women and men's livelihood options and make a difference in their everyday life. These assets include human capital: labor, skill, knowledge, economic capital: income and savings, property and wealth, physical capital: mental and physical ability, social capital: social status and dignity, social networks and natural capital: land, water, food and so on. Comparatively the availability of these assets is shaped by individual and household actions with broader socio-economic-political structures and processes where gender plays a vital role because differential norms and values in the society influence women and men's capacity to accumulate these assets depending on their specific gender role and relation. Highly vulnerable women have specific vulnerabilities in the transition period and after migration from rural to urban area because their gender position shapes their vulnerabilities as well as the capacity to adaptation in the adverse situation.

The study found some causes of vulnerability of women after migration. Economic insecurity was a key factor enhance the impacts of migration on women because their high levels of pre-disaster and post-disaster poverty, secondary status in the labor force with informal-sector work, lack of rights in land and property and burden of domestic responsibilities were responsible for economic vulnerability after migration due to climate-induced natural disaster. Lack of access to and control over property and resources caused the economic vulnerability of female migrants. Female participants mentioned that they had no land property and ownership of land which might support them in the crisis period before and after migration. So, land ownership is essential to women empowerment for socioeconomic aspects and gets gender equality. Though the risk of violence and discrimination were present in the workplaces, financial hardship forces to the female migrants to work under hostile conditions. Before migration, the female respondents almost all were homemakers and engaged in agricultural works such as crop processing, poultry and cattle farming, vegetable gardening in front of homestead. In their origin, they had a social dignity according to their social class. However, they are treated as the poor wealth less people in the city because of their socioeconomic transformations after migration.

3.4 Gender Dimensions of Climate Change Induced Migration

Risk is differentially distributed between women and men according to their gender position within societies. The root causes of social vulnerability depend on the human settlement where they live as well as political-economic and social structure. Within societies, women and men's relative ability to access or control over resources is shaped by as well gender, age, mental and physical ability, citizenship status, ethnicity etc. which are needed during and in the aftermath of natural disaster (Agarwal, 1992). Women migrants' vulnerabilities can be seen as a cycle that forms and reforms itself continuously. For those who had relatives and social network support in Khulna City, searching for housing was easy but who did not have such support, the accommodation process became more stressful to them. Finding housing was the first challenge for climate-induced migrants. Apart from searching for shelter in the city, looking for work was another primary requirement in the adaptation process. Thus, women were more victimized group in the consequence of natural calamities. After migration disintegration with the host community and less ability to cope with the urban society's norms and values, less social dignity for economic condition caused social vulnerability of them. Besides, women migrants faced dilemma between village traditional values and modern values of urban settings. They had to bear the double burden to role in their families as a mother, wife, and/or daughter in urban settings after migration. In struggling period most of the female participants suffered from anxiety and post-traumatic stress when they had to look after their family members. After migration female respondents were usually involved in the informal works for their health, work ability and coping capacity with the work environment which were basically linked with gender relationship in the given society whereas, the gender divisions of labour made them more vulnerable in their working places. Most of the male migrants had no permanent jobs, thus the economic crisis with poverty influenced men to violent acts against women which created problem in family life. Two female participants of FGD-1 narrated that at the early stage of migration because of their poverty they had to drop out their girls from the schools and they had no alternative way to give early marriage of their girls. So women migrants' position was more vulnerable than male migrants for adaptation process in urban settlement. Most of the cases, the host community did not welcome the male and female migrants for the fear of reducing job opportunities and declining wage of them. That situation increased the risk of violent activities and conflict between the migrants. That type of violent activities created noise in the city slums which disturbed the city dwellers, particularly the nearby residents. It decreased social interaction between the respondents' and the host community in the destination places which interrupted social integrity. In addition, conflict and competition with the host community to find informal daily work in Khulna City hindered the climate migrants' inclusion in the local labour markets which created anxiety and tension in the migrants. They suffer from identity crisis in urban settings and this situation incises the chance of conflict among the migrants and the hosts. Both male and female respondents suffered from identity crisis in urban settings because of fail to cope with the urban culture

3.5 Educational Backwardness Creates Vulnerability of Climate Migrants

Out of 65 participants, most of them (44) were illiterate in the study area, with the following 19 had primary education and only two completed secondary schooling. In this study, we observed that the respondent who passed the secondary school certificate examination, had small-scale business in the village, he did not change his occupation after migration in Khulna because he had the experience about small-scale business. After migration, due to the education, adequate experience and knowledge about that business, his socioeconomic position was better than other migrants who were engaged in blue-collar jobs. Another small-scale businessman who changed his occupation as an employee of a hotel and took the benefit from the urban life for his educational qualification. But all the female respondents' educational qualification was under class eight which hindered to get any kind of white-collar jobs. For that reason, they could not upgrade their socioeconomic conditions to minimize their vulnerabilities. Additionally, two female respondents had the vocational training of tailoring work, therefore, they managed some money from NGOs and bought the tailoring machine and started their job as the seamstress after migration in Khulna. Their socioeconomic position was relatively better than other female respondents. Moreover, after migration, the migrants did not get any kind of vocational training from government organizations or NGOs because of their poor social network. Lack of knowledge, skills and training pushed both male and female migrants to take up mostly manual, unskilled jobs for their subsistence. Therefore, it can be said that educational qualification, vocational training and skill made the difference among the migrants to upgrade their socioeconomic position. For their marginal position they had limited access in political power and representation. Between women and men migrants' women power was less than men for every aspect of life within family and community for their gender position.

3.6 Occupational Impacts of Climate Change Induced Migration on Gender

Climate-induced natural disasters' sudden-onset and slow-onset effects interrupt the agro-based works. Two massive cyclones: Aila and Sidr were destroyed shrimp and crab farms and agricultural lands in the southwest coastal region of Bangladesh. Water logging or regular inundation after the cyclones devastated the means of production of agriculture. The respondents who were dependent on cultivation could not produce crops as long as their agricultural land was under saline water. The shrimp cultivators who lost their shrimp ponds due to the cyclones, they had no alternative way to repay their loss. That situation limited the working opportunities of the affected people in the adverse situation. In their origin, the respondents wanted to avoid taking the loan from local NGOs or other sources after the natural disasters because they had no capacity to repayment the loan with the interest at that time. Therefore, they took the decision for migration in Khulna City as the part of adaptation process. Lack of vocational knowledge and skill, the majority of the male respondents were involved in the informal or unorganized sectors such as rickshaw or van pullers, construction workers, ship-breakers or any kind of day labor to change their previous occupations after migration. Thus, they faced the hardship to cope with the urban social structure. The collected data showed that most of the blue-collar migrants' jobs were not permanent. The competition was higher but the payment was not sufficient. Furthermore, the lack of employment contracts and social networks both male and female migrants had no labor rights. It created the difficulties to obtain wealth for securing their lives in destination places. Before migration, the male respondents were engaged in fish/shrimp or crab cultivation, agricultural production, fishing, day laborers, van pulling, wood and honey collectors and petty business. After migration, the monthly income of all the male migrants were decreased whereas, the rural middle-class people earned handsome money to maintain their livelihoods before natural disasters. After migration, all but six male respondents changed their occupations. Among 23 female migrants, twelve were become home maker to house maid and two worked as a tailor who had the training about tailoring work before migration. They earned monthly around three thousand Bangladeshi Taka (BDT) for helping their family to reduce economic crisis but those incomes did not support them to upgrade the socioeconomic condition because their work was considered as a lower class job in the context of urban society. Rest of the female respondents were homemakers. One of the female participants of FGD-3 said that - "Cyclone Aila destroyed our homestead and we had no land. My husband was involved in agricultural work as day laborer. So, we went to Khulna from our village to searching a job for our survival. Now my husband is a rickshaw puller and I am a housemaid."

The rickshaw pullers, van pullers, ship-breakers, construction and day laborers earned averagely for every month around seven thousand to nine thousand BDT, because their job was not permanent and they could not earn equally for every day. So, they were struggling to fulfil their basic needs and they staged in lower socioeconomic position in the urban society. Only one respondent could upgrade his socioeconomic position who was a petty businessman before migration and after early stage of migration he worked as an employee in a hotel. At present, he is the hotel manager of this hotel who can successfully reestablish his life in this city for his educational background. Because he passed higher secondary certificate examination which helped him to get the job. In their villages, the respondents had an identity and dignity, some wealth, agricultural lands and permanent homesteads. Moreover, the higher urban living cost created barrier to save money for their future life. Most of the day laborer respondents were struggling to get the jobs because

day laborers were surplus than the demand in Khulna City. As a result, the day laborers were forced to work in low wages. The data shows that after migration the respondents income were decreased. The migrants lost not only their occupations but also their social dignity, honor and status as well as social networks after migration. It changed their overall livelihood and broke their mental strength because the occupational changes of the migrants led the transformation of downward socioeconomic status of their life.

3.7 Ecological Vulnerability of Women and Men after Migration

Ecological change with housing condition and sanitation in the city slums of Khulna created ecological vulnerability. Because the poor migrants rented house in slum areas which were not environmentally hygienic for the inhabitants which were mostly located in the more vulnerable locations. The climate migrants suffered multiple aspects of deprivation in the city which created an obstacle to maintain a decent standard of living. The rooms were narrow with scarcity of day light and created some problems to maintain the privacy of conjugal life for staying with adolescent girls and boys. Moreover, the city slums in Khulna had inadequate access to pure drinking water and sanitation, insecure land tenure and inadequate waste management, transport and electricity. This research discovered that most of the female respondents used common kitchens to cook food where sometimes they made quarrel with each other to maintain the serial. It hindered the societal harmony between the host community and the female migrants. Female respondents faced some problems in the use of the unhygienic and common toilets for less privacy. They reported that sometimes the toilets and bathrooms went under water in rainy season which created more difficulties for them and their children as well as older members of their family. One female respondent told that- "*Last year my mother-in-law broke her leg to go to toilet in rainy season because the toilet was sludge. We spent a lot of money for her treatment in the Khulna General Hospital.*"

3.8 Organizational Vulnerability of Women and Men after Migration

Female respondents faced higher levels of insecurity for lack of basic services including health, safety because the lack of strong national and local institutional supports and gaps in significant policies, development plans and strategies for the climate migrants which led organizational vulnerability both male and female migrants. Both male and female respondents faced the difficulties in getting voter identity cards as well as political support with other urban facilities because the host people denied to recognize them as the permanent residents in the city. Both male and female migrants revealed that they did not get assistance from the governmental or non-governmental organizations as climate migrants because there was no governmental monitoring for the affected people after migration in Khulna City due to lack of actual data about climate migrants. In Bangladesh, climate induced migrants are not recognized as more vulnerable group in the national or city level policies (Mallick, 2014).

3.9 Physical Vulnerability of Women and Men after Migration

The data showed that after disaster period women faced more food insecurity than men because they tried to feed their children in the period of food scarcity according to their gender role as mother. After the cyclones, natural disasters such as, diarrhea, dysentery, fever, typhoid, skin diseases were broken out in epidemic form and women and children were more victimized than men for their biological condition. Moreover, women were more involved with water related work in their household such as cook food, wash cloth etc. so, they were more affected by waterborne diseases and they had to look after the family members who were sick, that's why, they had more chance to attack by the diseases from the family members. Women migrants faced more physical and emotional disturbances in disaster period and after disaster period for their vulnerable socioeconomic position in the society. Furthermore, psychological vulnerability of women migrants predominantly raised from their family inherently and they played the vital role of caretaker to the family without paying attention to their own health condition for their instincts. Feeding the children and other family members were their first concern and their family members ignored to take care about the female members. After migration both male and female migrants face some physical and mental problems with trauma and stress such as soreness, sleep disturbance, eating disturbance, anxiety, fear, anger for searching a secure shelter and job primarily for their survival. It created some disturbance in family life. Female migrants also informed that their husband quarrel with them for the period of economic crisis and they always mentally depressed in the early stage of after migration, sometimes women migrants were physically assaulted by their husband. The female migrants who worked as housemaid, reported that in their workplaces sometimes they were mentally tortured by the members of the household but they had no alternative way to do the work as housemaid for their poor economic position. In addition, men migrants mentally suffered to play their gender role in the family. Because they are the head of the family and the main bread earner who have to maintain the whole family by supporting socioeconomically. After migration, the male migrants faced economic insecurity to lose their previous occupation, wealth, home and prosperity as well as fail to get a permanent job in Khulna City. In that situation they were mentally depressed which had the bad impacts in their family life and workplace. Men's roles as protectors place them a greater responsibility for risk taking during and after a disaster, both within their households and

community as volunteers to save the family members and community people. One of the female participants of FGD-2 narrated that her husband was washed away by the sudden attack of cyclone Aila to catch fish in the river. He was not aware about his safety rather than to catch fish to earn money for maintaining the family because he was the only earning member in their family. Another male respondent described about his injury to save his child from a falling tree during cyclone Sidr. He also mentioned that at that moment, his left leg was broken and suffered a lot. Therefore, men face the vulnerability during and after disaster period for their different gender roles and responsibilities.

3.10 Recommendations

At first, it is needed to identify the climate migrants as most vulnerable group who lost their properties, homelands, agricultural lands and fish farms and means of production due to the worse effects of natural disasters and include them in national census as the internal migrants. To reduce the worst effects and consequences of climate change on affected populations, it is essential to develop gender sensitive policies, strategies and programs that empower population to adapt with the climate change factors in a proactive way. Local, national and international plans and policies are needed for ensuring the protection of the rights of climate change induced migrants. To establish an inter-governmental framework on resettlement for more marginalized groups according to their gender and socioeconomic position to make the safeguard from the effects of slow onset environmental degradation. For forced climate migrants, it is necessary to discover resourceful and inventive methods to identify long-term relocation and resettlement options to ensure their housing, land, property and human rights and dignity as the human beings. To develop and support the programs that establish an alternative economic model reflecting values of justice, equity, gender equality and sustainability. Besides this, more monitoring systems of the local government should be increased so that all victimized people may get the benefit from the social safety net programs to reduce their vulnerabilities.

4. Conclusions

The formulation of gender representative strategies to climate change and disasters associated with migration are required not only the determination of the risks and vulnerabilities, that apply to women, men, girls, and boys at all levels but also drawing these strategies to tackle a wide range of socioeconomic, cultural and structural inequality. Unequal distributions of hazard risks are linked to inequalities such as poverty, limited access to natural resources and mobility, as well as culturally constructed expectations that shape women and men's position, household divisions of labor and caregiving responsibilities, including gender role and relation. Climate change and natural disasters affect men and women in different ways. Vulnerability to climate hazard is also shaped by gender roles and responsibilities. Therefore, gender is a key analytical tool to climate migration because gender roles and relations meaningfully affect women's and men's decisions to migrate for climate change and environmental reasons. The existing cultural, social, and economic trends of the society lead to low socio-economic status of women which generate their specific vulnerability during and after disasters as well as subsequent migration. So, gender equality concerns must be needed and integrated into national and international negotiations, arguments and agreements on climate change mitigation and adaptation and climate migration discussions broader aspect, to ensure the gender-based policies so that the climate policies do not exacerbate existing inequalities and vulnerabilities or create new ones between women and men. It can reduce the vulnerability of environmental risk who are victimized by natural disasters and prevent forced migration due to climate hazards. In this study, we collected small-scale data from the climate migrants who were permanently migrated to the Khulna City in a unique context. These small-scale data identify that there is a gender difference at all level of the climate change induced disaster process including climate migration. However, we fail to conduct quantitative research due to the shortage of large-scale data of climate migrants which is one of the limitations of this study. Additionally, we could not collect the holistic information from the climate migrants on broader aspect which is another limitation of this research.

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