A Study on Climate Change and Gender in Bangladesh

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EXECUTIVE SUMMARY

Bangladesh has been ranked as the 7th most vulnerable country in the world in terms of risks from natural hazards, in which tidal surge, salinity, flooding, river erosion and cyclones are the most frequent ones.[1] It has now been widely recognized that Bangladesh, with its deltaic positioning, populous nature and low adaptive capacity, is considered one of the most vulnerable countries towards climate risks in the world across all natural and development dimensions.[2] A growing cross-country literature recognizes differential effects of climate change on gender issues, particularly on women. These include effects on women's economic empowerment and female labor force participation, on voice and agency, and on gender-based violence. There has also been an emerging literature on the impacts of migration due to climate change and their regional implications on gender-oriented norms and issues. These include effects on gender norms and women, effects on poverty, food security and livelihoods and on displacement.

These studies have explored the impacts of climate change on women's empowerment and female labor force participation, voice and agency, gender-based violence and differential impacts of climate-induced migration in an isolated manner. That means literatures have explored impacts of climate change on gender indicators e.g., women's empowerment, voice and agency, gender-based violence separately. There are extremely few context-specific studies which have explored gender gap dimensions among varying degrees of climate-induced migrated households; and quantitative data gap[3] exists in the climate change induced migration-gender nexus dimensions to analyze the socio-economic narratives of these households in rural and urban settings This study, therefore, fulfills this data gap and is the first study in which climate change-gender nexus issues have been looked at with having a focus on climate-induced migration under a single framework contributing to this research gap in the **'Climate-Development'** literature. Therefore, the overall goal of the study is to understand the nexus between climate change, internal migration and gender issues in coastal Bangladesh.

Gender is complex and so do its physical and social dimensions. The integration of environment and its entities is a relatively new addition in the gender literature in which climate change adds newer and cross-cutting channels of vulnerability and generates disproportionate impacts. Policy wise, this is extremely vital as climate change is a longer-term phenomenon and

[1] See Global Climate Risk Index (2021).

[2] The World Bank's recent Strategic Country Diagnostic Update identifies strengthening climate resilience and fostering green growth to reduce current and future generations' vulnerability as one of Bangladesh's frontier challenges.

[3] Sams (2019) failed to conduct quantitative research due to the shortage of large-scale data of climate migrants and could not collect holistic information from the climate migrants on broader aspects which are a major limitation of this research.

could create severe regional development challenges that could persist for decades. This could further produce profound impacts on the sustainability of other development policies and achievement of the global parity goals as well. It is now widely accepted that sustainable growth could not be achieved at the cost of environmental degradation and at the cost of gender inequality. Climate change affects male and female disproportionately and women are more affected due to their vulnerability and existing gender inequality across various gender and development indicators such as access to income and resources (i.e., economic opportunities and diversification), empowerment, voice, agency and leadership.[4] Therefore, we identify climate affected migrated and non-migrated households and search for evidence against the contemporary gender gap dimensions to investigate the likely impact of climate change in this study, and thus highlight some key recommendations with embedded challenges herewith intended to close this gender gap which climate change might exacerbate.

We employ a mixed method approach i.e., qualitative and quantitative tools to collect data in order to understand various facets of the nexus between climate-induced migration and gender in Bangladesh. We have selected few vulnerable regions in the coastal belt and focus on climate migrated households who had internally migrated after being affected by climate-induced natural disasters since 2020. We select a retrospective timeline of year 2020 due to occurrence of a major natural event i.e., Cyclone Aphan[5] and therefore adopt purposive sampling of identifying migrated households triggered by this extreme event and other climate-induced natural disasters subsequently till the survey period. We further select a group of non-migrated households who are climate-affected but did not migrate. It needs to be noted here that both migrated and non-migrated households had been identified and surveyed in the destination regions only in the coastal belt.

We employ criteria-based multi-stage sample selection techniques to select the following representative samples. Our primary target is to identify a representative sample of eight (8) Upazilas i.e., Sub-districts from four (4) Districts across the administrative divisions of Khulna and Barishal. As our focus is looking at the internal climate migrant households in the coastal zone; in the **first stage** of our selection process, we select four (4) Districts; namely, Bagerhat, Khulna, Satkhira and Barguna as proven climate-affected regions. Our random selection of the Sub-districts allows us to select one Rural and one Urban location from each District respectively. We define Urban and Rural areas based upon population size and administrative sub-division as identified by the Local Government i.e., with or without the presence of the Pourashava/Municipality. Therefore, the selected Sub-districts (Upazila) are: Mongla, Sarankhola, Dacope, Koyra, Assasuni, Shyamnagar, Patharghata and Taltoli. Our **second stage** selection criterion is the crucial aspect of poverty, risk and vulnerability indicators. We have defined three categories of poverty: Extreme High (> than 50%), High (between 20-50%) and Low (<20%) in this analysis. Our sample incorporates four (4) extreme high poverty and four (4) high poverty concentrated Upazilas. For the risk indicators, we have utilized the indexes developed by Karim (2020, 2018). Here, low flood risk indicates monthly rainfall exceeding 15% of average annual rainfall for this sub-district and monthly rainfall exceeding one standard deviation above the mean for that month throughout the available time period; and high flood

[4] See also Bangladesh Country Gender Assessment (2021).

[5] Super Cyclonic Storm Amphan was an extremely powerful and catastrophic tropical cyclone that caused widespread damage in Eastern India, specifically in West Bengal and Odisha, and in Bangladesh, in May 2020.

risk indicates 20% of average annual rainfall and more than two standard deviations above the monthly mean. We have further utilized the broad categorization of the Agro-ecological zones of Bangladesh to indicate the geological vulnerability of the sample Upazilas which is mostly the Coastal cluster in this process. Finally, our **third stage** selection criterion is based upon gender estimates focusing on the labor force participation and concentration of youth population in each selected Upazilas.

We strategize our household selection based on their mobility patterns after being affected by climate-induced natural disasters since the year 2020. We adopt a purposive sampling approach and select a representative sample of approximately 100 climate-affected households per District (Zila) with an accumulated number of 403 households from eight (8) selected Upazilas across two (2) administrative divisions. Our representative sample encompasses 70% migrated and 30% non-migrated households out of per 100 purposive samples from each Upazila. The survey had been conducted during September-October 2023. As part of our qualitative research tool, we have conducted seven (7) Focus Group Discussion (FGD) meetings with essentially using a semi-structured discussion guideline.

We identify gender gaps (as defined by the disparities in indicators between male and female primarily in three (3) categories/pillars: i) Gender gap in educational attainment; ii) Gender gap in employment and sectoral livelihoods; and iii) Gender gap in income. We looked at the gaps in our fourth (4^{th}) pillar i.e., represented by women's IGA income, economic empowerment, social decision-making, voice and agency, and gender-based violence (GBV) from the disparities among females between migrated and non-migrated households.[6] In each of these pillars, we identify the evidences where the gender gap is found to be wider (higher) i.e., positive (+) and also highlighting the indicators in which gender gap had showcased to be narrower (lower) i.e., negative (-).

Our evidence in revealing the gender gap in educational attainment show that for households located in the rural areas - migrated and non-migrated, the gender gaps are significantly wider at the tertiary level and others category, while the same has been observed at the secondary level for non-migrated households only. However, in the urban region, we found the gap to be significantly wider particularly at the higher secondary level for migrated households only. This evidence showcase that despite incredible progress has been achieved in primary and lower secondary education in Bangladesh, there are relatively fewer governmental programs incentivizing female tertiary education, contributing to low female enrollment and this turns out to be true in the context of climate change as well.

We analyze the gender gap in employment and sectoral livelihoods using the current employment status of male and female migrated and non-migrated households' members in the rural and urban region. Our results show that gender gap is significantly wider in day (casual) laborer (non-agriculture), which is followed by paid employee and employer/entrepreneur among migrated households in the rural areas. For non-migrated households, the types of employment in which gender gap is significantly higher is day (casual) laborer (non-agriculture), self-employed (non-agriculture), fishing and employer/entrepreneur respectively. It has been revealed that males from migrated households shifted from river fishing to various professions, including non-

[6] This is also in line with the identified pillars stated in the Bangladesh Country Gender Assessment (2021).

agricultural day laborer roles such as shoe stitching, cleaning, barbering, and teaching. Conversely, gender gap is found to get significantly reduced in categories such as contributing family member, poultry farming, domestic worker and animal husbandry for the same group of households (i.e., migrated). Gender gap is found to be significantly wider for day (casual) laborer (non-agriculture) and paid employee, while significantly and substantially became narrower for contributing family member category in the urban region for migrated households. Interestingly, evidence show that gender gap has significantly been reduced in the self-employed (non-agriculture) category for non-migratory cases in the urban region. There has been a feminization of agriculture in Bangladesh, yet a large share of women remains confined to home-based and low or unpaid work; and even among paid agricultural workers, rural women are more likely than men to be in vulnerable employment.[7] This evidence further re-emphasizes the fact that there still exists significant gender-specific barriers towards diversified and high-paid jobs for women and the challenges of climate change could further widen these gaps.

We find that gender income gap in both the rural and urban locations is significantly wider (higher) for migrated households. We believe, this gender disparities in average monthly income is perhaps due to the occupational choices, opportunities and their changing patterns; and of course, access to financial and other support. Furthermore, we recorded income earned through women's income-generating activities. Therefore, the IGA income gap indicates differences between migrated females and non-migrated females in the rural and urban region. Our gap analysis between female-migrated and female-non-migrated income shows that income gap in IGAs is wider (indicating migrated female income is higher) in the urban areas.

We analyze women's empowerment from the perspective of women's economic decision-making and social decision-making power in this study. On the decision whether female household members alone have any money to decide what to spend on, our results indicate that the gaps between migrated and non-migrated households are wider in the rural areas. Moreover, we find that the female urban responses gap on whether yourself or your husband decides on who usually takes decision on how to spend the money female members earn have been wider in both cases in the urban region, while your husband responses have been higher in the case of non-migrated households in the rural locations. This depicts that non-migrated females decision-making power have deteriorated (as husbands took more decisions) compared to migrated females on money spending decisions of females own income in the rural context. It needs to be noted here that these wider disparities has been statistically non-significant. Regarding spending behaviour of loan money, we observe similar patterns in terms of decision-making between self (female) and her husband separately with the gaps been wider (higher) between migrated and non-migrated households in both urban and rural locations.

We also analyze women's social decision-making power using mobility and reproductive decision indicators. We found that migrated females are better decision maker than non-migrated females in self-decision making in mobility decisions of going to market (hat bazar) in the rural region. Migrated households are more joint decision maker in the urban locations implying widening the gap with non-migrated ones. We further analyzed women's reproductive decision-making process for migrated and non-migrated households in both urban and rural areas. In response to decision-making of using birth control method in the rural region, migrated females

[7] See Bangladesh Country Gender Assessment (2021).

are significantly better-off in the urban region and the gap is wider. Although non-migrated males (husband) are found to take more birth control method decisions in the rural areas, migrated males are significantly found to be dominant in the urban case. Our results show that migrated households' female members (self) and husband jointly take reproductive decisions (e.g., birth control method) widening the gap in the rural locations, and these gaps are found to be significant as well. This further necessitates the fact that despite migration could bring economic diversification and opportunities for climate affected households, women's empowerment from the perspective of economic and social decision-making needs to be ensured towards enhancing women's voice and agency and closing the gender gap in this key parity dimension.

We examine gender-based violence (GBV) indicators among migrated and non-migrated households in the rural and urban region. We identify physical abuse and verbal abuse as GBV indicators to understand the gaps between female migrated and female non-migrated responses. Our results depict that migrated female members are often physically abused in the urban areas i.e., wider gap. Additionally, the cases of threatening and divorced/remarried are found to be more prevalent in migrated households compared to non-migrated ones and the gaps are wider (i.e., positive and non-significant) among the climate affected (migrated and non-migrated) households in both regional (urban and rural) contexts. We further analyze the case of verbal abuse among migrated and non-migrated households in the same regional context. We found migrated female members are often or sometimes verbally abused in the urban locations (i.e., wider gap). Around 73.28 percent migrated households did not face verbal abuse with the gap being wider in the rural locations. Likewise some other gender indicators, these disparities in both physical and verbal abuse among climate affected migrated and non-migrated households are also not found to be statistically significant. This evidence re-emphasizes the fact that patriarchal social norms also exist in the climate change setting and GBV could further restrain female economic opportunities in the regional contexts as well.

In this line of discussion to address the gender gaps, our recommendations are as follows:

PILLAR(S)	KEY RECOMMENDATION(S)
ON GENDER GAP IN EDUCATIONAL ATTAINMENT	Based upon existing evidence on spatial disparities, targeted infrastructure and institutional capacity building should be undertaken in the education sector to focus on the climate affected vulnerable communities. Develop and initiate intervention programs to increase enrollment at the tertiary level in the rural areas for both migrated and non-migrated households. As added incentives, the programs could design gender specific skill-based training programs focusing on the regional industrial demand targeting academia-industry interlinkage for the climate vulnerable communities as well. Climate and

	mainstream development policies should also ensure access to GOB's Technical and Vocational Education and Training (TVET) programs to achieve gender parity in educational attainment for these targeted groups. Address and provide incentives to increase enrollment and ensure completeness at the secondary level for non-migrated households in the rural regions. For example, providing more scholarships to encourage more girls and women to complete their schooling. Provide and ensure support to close the gap at the higher secondary level for migrated households in the urban locations. For example, expanding educational incentives for girls' families (i.e., cash, school supplies, food) to encourage families to send and keep their girls at school till their degree completion and discourage child and early marriage accordingly. Educational institutions should be made safer to encourage and ensure girls to enroll, attain and improve learning outcomes. This will also complement climate change induced natural disaster preparedness policies as well, due to the multi-purpose usage of educational institutions for cyclone and flood risk management necessitating the importance to address gender specific issues during emergencies.
ON GENDER GAP IN EMPLOYMENT AND SECTORAL LIVELIHOODS	Remove gender specific barriers and address demand and supply constraints for diversified employment opportunities and promoting job creation in growth sectors (identified as having potential for women) for climate affected migrated and non-migrated households in the rural and urban settings. Provide support e.g., skill-based training and access to finance/credit (via kinship and

	institutions) to initiate and implement entrepreneurial activities in the non-agriculture sector to reduce gender gap in high paid jobs for migrated households in the rural areas. Provide and ensure support to adopt self-employment in the non-agriculture sector for non-migrated households in the urban region to reduce the gender gaps. Design intervention tools such as women-focused locally-led climate livelihoods, empowerment and resilience program to address women's access to productive resources and credit towards occupational choice and secure livelihoods, female labor force participation, facilitation in local coping strategies, creation of female-headed group business ventures and scaling up with economic and social safety net which could act as an informal insurance mechanism for the climate affected gendered communities. This could also provide access to low cost, affordable, high quality childcare services in nearby distances for both migrated and non-migrated households in the rural and urban locations. Male-dominated sectors should be made more accessible to women i.e., providing incentives to female entrepreneurs to access markets, enabling women's access to and use of climate-adaptive technologies, establishing links between women producers and retailers to facilitate access to technical and market information, and between producers and private sector firms engaged in marketing and export, and facilitating women's entry into local community groups, networks and trade associations.

ON GENDER GAP IN INCOME	Enable women-focused network-based community groups with prioritization of women leadership to address gender disparities due to the occupational choices, opportunities and their changing patterns for migrated households in the rural and urban region. Despite the female non-migrants demonstrated keen interests to engage in income-generating activities (IGA) with aspirations encompassing poultry farming, fish cultivation, and vegetable cultivation; however, the scarcity of available land, financial and other support posed a considerable threat to their endeavors. Therefore, access to productive resources should be provided to non-migrated households as well from government programs or NGOs aimed to reduce gender gaps in income in the rural and urban contexts.
ON GAPS IN WOMEN'S EMPOWERMENT, VOICE, AGENCY AND GENDER-BASED VIOLENCE (GBV)	Address patriarchal norms through programs and policies to improve women's financial inclusion and financial control and increase women's economic and social decision-making power. These programs should address social norms amidst constraints through behavioral change communication campaigns for targeted females in migrated and non-migrated households in the rural and urban region. For example, counselling services should be provided for migrated females in the rural areas to improve economic decision-making on whether she has money on her own to spend and herself or her husband's decision-making power separately to decide to spend the money on her own in the urban locations to reduce the gap.

	Design gender specific programs to improve economic decision-making power for non-migrated females to reduce the gaps in husband's responses and spending loan money in the rural regions. These programs should also implement social decision-making action plans to improve joint decision-making i.e., self and husband in the urban locations in mobility decisions (e.g., going to market/hat bazar) with additional focus in self decision-making for non-migrated households in the rural areas. Specific action plans could also be formulated to address reproductive decisions (e.g., birth control method) for non-migrated females to reduce the gap in both rural and urban context. Implement programs to address physical and verbal abuse threats for non-migrated females to reduce the gap in the urban locations. These programs should also develop action plans to reduce the gap of threatening to divorce/remarry between female members of migrated and non-migrated households in the rural and urban settings. Locally-led climate adaptation policies and action plans should emphasize more on post-migration responsive coping strategies and facilitate to get access to public services, safety nets and legal help to address gender-based violence threats and risks among migrated households. The issue of GBV is multi-dimensional and hence requires multi-dimensional approach towards prevention and response at the regional level. The primary reasons behind early marriages are lack of education and poverty necessitating integrated (i.e., economic, social and legal) responses to gender-based violence indicators at the local level.

	We place credit or microfinance group as an important intervention for migrated and non-migrated households in the rural and urban settings to ensure voice and agency in locally-led climate change adaptation programs. This further underscores the need for both demand and supply side interventions i.e., from central to local, households to institutions and so on; and could also increase female sectoral employability (e.g., agriculture and services), decrease the costs of gender burden[8] and provide female leadership role in disaster management as well.
ON OTHER GAPS AND POLICY CHALLENGES	Gender differences in economic and social empowerment indicators needs more attention in both regional settings (e.g., rural and urban) in the Coastal belt. Inclusiveness challenges are a major issue in climate policy implementation to reduce vulnerability. Interventions should focus on age group-based vulnerability as well. For example, age group 60 plus (+) are expected to be less mobile in terms of migration and possess higher probability in terms of categorizing themselves as left-behinds, particularly in the migration setup. This finding has broader policy implications in the disaster-specific resettlement framework, disaster preparedness (including target group-based cyclone shelter designation), risk management and extension of demographic urban services towards urban development. Women's participation and leadership should be enabled across sectors, especially in urban planning and disaster preparedness to ensure

[8] According to FAO (2015), women account for only 12.8 per cent of agricultural landholders in the world.

	women's engagement in disaster preparedness plans. Women's vulnerability could further deteriorate without disaster-specific and gender-specific intervention programs in the regional context. Both places of risk origin (particularly the Sundarbans) and internal climate migrant destination belts needs to be adequately taken care of in the relevant policy space to overcome multiple migration challenges (in terms of livelihood diversification, women's empowerment, voice and agency) and generating poverty traps.