Climate Risk Management 52 (2026) 100813

Contents lists available at ScienceDirect

Climate Risk Management

journal homepage: www.elsevier.com/locate/crm

Revisiting the Climate-Migration-Conflict Nexus: Community-Level evidence and contextual pathways in coastal Bangladesh

Gazi Alif Laila [a,c,*], James D. Ford [a,b], Diana Ivanova [a], Jouni Paavola [a]

[a] Sustainability Research Institute, School of Earth, Environment and Sustainability, University of Leeds, Leeds, United Kingdom
[b] Priestley International Centre for Climate, University of Leeds, Leeds, United Kingdom
[c] Department of Political Science, University of Dhaka, Bangladesh

ARTICLE INFO

Keywords:
Climate change
Migration
Conflict
Climate-migration-conflict nexus
Socio-economic inequality
Bangladesh

ABSTRACT

The relationships between climate change, migration and conflict are increasingly drawing scholarly attention, yet empirical evidence from the community level remains limited. This research examines how climate change, migration and local conflict dynamics intersect in two climate-vulnerable regions of Bangladesh – Khulna City Corporation and Koyra Upazila. Using a mixed methods approach combining household surveys (N = 300), focus group discussions and key informant interviews, we explore how communities perceive and experience the climate-migration-conflict (C-M−C) nexus. Our findings indicate that migration alone does not generate conflicts: tensions emerge when migration intersects with poverty, fragile infrastructure and weak governance. By grounding theoretical debates in lived experiences, our research advances the understanding of the C-M−C nexus as a context dependent and indirect process. It contributes to the literature by identifying stratified nexus experience and concrete conflict mechanisms. The results highlight the need for inclusive urban planning, improved public services, and the alignment of climate change adaptation strategies with conflict sensitive governance.

1. Introduction

The relationships between climate change, migration and conflict are increasingly examined in the academic literature (von Uexkull & Buhaug, 2021), reflecting growing concern over how climatic hazards may reshape human mobility and security (Abel et al., 2019). Climatic hazards and their consequences are seldom straightforward as they interact with governance structures, socio-economic inequalities and existing tensions to generate diverse outcomes ranging from adaptation to insecurity (Brzoska & Fröhlich, 2016). The IPCC (2022) and Clement et al. (2021) forecast significant climate-related internal migration in the coming decades (Clement et al., 2021; IPCC, 2022), which underscores the need to explore how these dynamics play out in specific socio-political contexts, and what they imply for conflict and stability. Bangladesh is a good context to explore these dynamics, as recurrent cyclones, salinity intrusion and flooding are undermining traditional livelihoods and triggering large scale internal migration to

* Corresponding author.
E-mail addresses: eegal@leeds.ac.uk, aliflaila@du.ac.bd (G.A. Laila), J.Ford2@leeds.ac.uk (J.D. Ford), D.Ivanova@leeds.ac.uk (D. Ivanova), J.Paavola@leeds.ac.uk (J. Paavola).

https://doi.org/10.1016/j.crm.2026.100813
Received 11 November 2025; Received in revised form 24 March 2026; Accepted 28 March 2026
Available online 3 April 2026
2212-0963/© 2026 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

and Koyra Upazila (see Fig. 1). These sites were deliberately selected as contrasting but interlinked settings, with Khulna functioning as a growing urban destination area for migrants from surrounding coastal regions, and Koyra representing a climate-vulnerable rural region of origin of migrants (Laila et al., 2025).

Khulna city corporation is a principal urban centre of Bangladesh which lies in the Ganges delta and is bounded by the Rupsha and Bhairab rivers. The city covers 47.12 square km and hosts over 719,557 inhabitants (BBS, 2022). The city plays a central role in regional trade and industry, particularly in jute processing, shipbuilding, and activities linked to the nearby Mongla Port. However, its low elevation, dense settlement and proximity to the Bay of Bengal make it highly vulnerable to climatic hazards such as flash flooding, tidal surges, salinity intrusion and water logging. Unplanned urbanization and the encroachment of natural waterbodies have reduced drainage capacity and caused frequent and prolonged waterlogging (Sarkar et al., 2020). Salinity intrusion from tidal rivers and rising groundwater salinity have degraded water quality, creating major challenges for supply of safe drinking water and infrastructure (Ahmed et al., 2020; Mahmud et al., 2020). These climatic and infrastructural challenges together with rapid population growth have intensified socio-economic inequalities and resource-based tensions. This makes Khulna a good site for unpacking how migration reshapes urban social dynamics and contributes to conflict.

Koyra Upazila, about 70 km southwest from Khulna city and bordering the Sundarbans, is one of the most hazard-prone coastal areas in Bangladesh. Covering 1775.41 square km with a population of 220,102 (BBS, 2022), Koyra is rural and its economy depends on agriculture, aquaculture and natural resources. Koyra's flat topography and proximity to the Bay of Bengal expose it to tropical cyclones, storm surges, salinity intrusion and riverbank erosion. Over the past two decades, major cyclones such as Sidr (2007), super cyclone Aila (2009), Amphan (2020) and Yaas (2021) have damaged embankments, inundated settlements and degraded freshwater resources (Islam and Hasan, 2016; Saha, 2017; Sultan and Maharjan, 2022). Surface and groundwater salinity have increased, which constrains productivity of agriculture and aquaculture and the availability of potable water (Shaibur et al., 2021). Most households depend on small scale farming, fishing and wage labour, all of which are highly climate sensitive. Environmental pressures have compelled many families to seasonal or permanent migration as a coping strategy (Laila et al., 2025; Saha, 2017). Recent evidence indicates that Koyra's residents experience high socio-economic vulnerability and widespread income instability, fragile livelihoods, and acute scarcity of potable water, intensified by limited adaptive capacity and institutional support (Tashmin and Islam, 2022). These factors make Koyra a good "area of origin" of migration to examine how climatic stressors catalyse displacement and influence local conflict dynamics.

3.1. Materials and methods

We employed a mixed methods approach that combined quantitative and qualitative methods. Such designs help bring together the statistical rigor of quantitative analysis with in-depth explanatory insights from qualitative inquiry, making it possible to capture both overarching trends and patterns and mechanisms that shape them (Castro et al., 2010). This approach is particularly valuable for unpacking complex and context-specific dynamics of climate induced migration and conflict, which benefit from multiple forms of evidence (Hermans and Ide, 2019).

Data were collected in two stages. In February 2024, a household survey was conducted. We surveyed a total of 300 participants, divided evenly between locals (n = 150) and migrants (n = 150), and with equal representation from Khulna City Corporation and Koyra Upazila. In Koyra Upazila, migrants were defined as individuals who had moved into Koyra Sadar from other parts of Koyra Upazila or from other upazilas and districts, and were residing in Koyra Sadar at the time of the survey. A survey questionnaire was designed to capture both demographic and socio-economic characteristics (e.g. age, gender, education, household income, livelihood sources, family size, and asset ownership) as well as participants' perceptions and experiences of the links between climate hazards, migration and conflict. The term "conflict" was intentionally left broad in the survey to allow participants to reflect on their own understandings and lived experiences. Guidance was provided by referring to locally relevant examples of everyday disputes and social tensions, such as disagreements over shared resources and neighbourhood relations, rather than armed conflict or large-scale organised violence. This conceptualisation of conflict focuses on everyday social tensions and disputes at the community and household levels rather than organised violence or armed conflict, reflecting evidence that smaller-scale conflicts are often more responsive to environmental stress and climate impacts than large-scale violence (Helman et al., 2020; Mach et al., 2019; O'Loughlin et al., 2014; Petrova, 2021). The survey combined structured questions with fixed response categories such as age brackets, income ranges, and yes/no items to generate quantifiable data. But it also included open-ended questions that allowed participants to elaborate or provide alternative answers (e.g. "if yes, what are those? or "Other, please specify"). Due to project-specific contractual and data-use restrictions, the full survey instrunment cannot be publically shared in its original form. For transparency, Appendix C (Table C1) provides a detailed paraphrased summary of the survey items.

The survey was designed to explore participants' experiences and perceptions of climate-related stresses, migration, and conflict-related tensions. While this focus allowed for an in-depth analysis of conflict dynamics, it may have limited the visibility of cooperative responses, such as collective adaptation or mutual support. The findings should therefore be interpreted as capturing salient experiences of conflict and social tensions rather than the full range of social responses to climatic stresses.

Participants were selected using a combination of a purposive and referral (snowball) sampling strategies and recommendations from community leaders, journalists, local government representatives and NGO representatives. These 'gatekeepers' facilitated access and helped build trust, which was important for research on migrants who are often difficult to reach (Bashir, 2023; Laila et al., 2025). Purposive sampling ensured both locals and migrants were represented across the two study sites. Within these groups, referral sampling was used to identify additional participants through introductions by previous participants. While not statistically representative of the entire population, this strategy allowed us to target communities most directly engaged in or affected by climate

related migration and conflict. The survey was administered face-to-face by the lead researcher in the local language Bangla to maximise accessibility, clarity, and participant understanding. Surveys were carried out either in participants' house or in community spaces, depending on what was most convenient and comfortable for them. An overview of the socio-economic characteristics of the survey sample is provided in Appendix A (Table A1).

The qualitative material was collected in August 2024 using focus group discussions (FGDs) and key informant interviews (KIIs). Four FGDs were conducted across the two study sites with separate groups for migrants and locals. Each group comprised six to eight participants and a mix of genders. Additionally, six KIIs were conducted with local government representatives, community leaders, NGO workers and journalists. An overview of the anonymised profiles of key informant interview participants is provided in Appendix B (Table B1). A purposive sampling approach, supported by local gatekeepers, was used to recruit FGD and KII participants, ensuring the participation of individuals with relevant knowledge and lived experience. Insights drawn from the survey guided the development of the FGD and KII protocols, directing the qualitative inquiry towards topics most salient to participants. Data were further enriched through personal observation and informal conversations with community members which helped capture additional contextual nuances and a richer understanding of participants' daily experiences.

The research was conducted in line with the ethical approval from the University of Leeds ethics committee (REB0852). Participants were informed about the aims of the research, voluntary nature of their involvement, and their right to withdraw at any time without consequences. An information sheet and informed consent form were translated into Bangla. Both verbal and written consent was obtained from participants. All data were anonymised before analysis and stored securely with password protection. Care was taken that migrants and other vulnerable groups felt comfortable when discussing potentially difficult experiences.

3.2. Data analysis

Our sample included 300 respondents, 150 of which were migrants. The survey data were processed and analysed using SPSS. The analysis began with descriptive statistics to summarise participants' socio-economic and demographic characteristics. To quantify uncertainty around observed proportions, 95% confidence intervals were calculated using the Wilson Method (Wilson, 1927), which is recommended for binomial proportion estimates (Agresti and Coull, 1998; Brown et al., 2001). To explore relationship between variables such as education, gender, income and perceptions and experience of migration related conflict, cross tabulations and chi square tests of independence were performed. Statistical significance was determined at the 0.05 level. This analysis helped identify patterns and associations between socio-economic factors and participants' views or experiences of conflict.

All FGDs and KIIs were conducted in Bangla and audio-recorded with participants' consent, then transcribed verbatim in Bangla. Only the quotes used in this manuscript were translated into English, with care taken to maintain the original context and meaning. Qualitative analysis was conducted using an inductive-deductive thematic analysis approach, rather than a grounded theory approach, with the aim of identifying recurring patterns of meaning across the dataset rather than generating theory (Braun and Clarke, 2006, 2021; Creswell and Poth, 2023). We employed NVivo to manage qualitative data and to conduct systematic coding and thematic analysis. A mixed coding strategy combining deductive and inductive techniques was adopted. A detailed qualitative codebook documenting code definitions and thematic structure is provided in the Supplementary Information. Deductive codes were informed by the study objectives and the literature, while inductive codes were generated organically from participants' narratives (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2006). Codes were continuously reviewed and compared across interviews and focus groups and subsequently clustered into broader themes that captured patterns recurring across multiple participants and data sources, rather than isolated or individual accounts (Braun and Clarke, 2006).

The resulting themes are analytically derived patterns within the data and form the organising structure of the Results section. The analysis identified several key themes, including resource competition, livelihood stress, social tension and exclusion, coping and adaptation strategies, socio-economic disparities and governance challenges. Qualitative quotations presented in the Results section were drawn exclusively from coded data segments and were selected to illustrate these recurring themes. That is, quotes are used as analytic evidence of thematic patterns rather than as anecdotal or stand-alone observations, in line with established standards for rigor and transparency in qualitative research (Patton, 2015; Tracy, 2010).

The analysis follows an explanatory mixed-methods logic, in which the survey data provide an overview of the prevalence and distribution of perceived and experienced local tensions, while the qualitative data are used to clarify what participants meant by "conflict" and how such tensions manifest in everyday life. That is, qualitative analysis is used to interpret and contextualise the survey findings, providing explanatory depth to the patterns identified in the survey (Creswell and Plano Clark, 2018).

3.3. Positionality

We acknowledge that our perspectives as researchers shaped the design and interpretation of the results of this research. The fieldwork and primary analysis were led by the first author, a Bangladesh researcher affiliated with a UK university. This dual position offered both insider and outsider vantage points. Shared language and cultural familiarity fostered trust and facilitate open dialogue with participants, while academic distance allowed critical reflection. We remained reflexive throughout about how our backgrounds, assumptions, and positionality might influence engagement, interpretation, and representation of participants' voices.

4. Results

4.1. Impact of migration on local conflict

The majority (73%, n = 219) of survey participants considered that migration has an impact on local conflicts or tensions. Migrants perceived a connection between migration and conflict more often (81.3%, n = 122) than local participants (64.7%, n = 97). A total of 76.7% (n = 115) of participants in Khulna City Corporation and 69.3% (n = 104) in Koyra Upazila expressed similar views. The difference is statistically significant, indicating a strong association between participant type and the perception of impact of migration on local conflict (χ^2 (2, N = 300) = 10.84, p < 0.004).

To distinguish between abstract perceptions and lived experience, we also asked whether the participants had witnessed or experienced local tensions or conflicts. Majority of the participants (73%) agreed: this was more pronounced among migrants (81.3%, n = 122) than among locals (64.7%, n = 97). In contrast, 35.3% of locals (n = 53) and 18.7% of migrants (n = 28) reported no experience or witnessing of local conflicts. Participants' reported experiences were broadly consistent with their perceptions of migration's impact on local conflict. A more detailed breakdown by participant type and study area (see Fig. 2) indicates that migrants in Khulna perceived a link between migration and conflict most often (86.7%, n = 65), followed by migrants in Koyra (76%, n = 57), locals in Khulna (66.7%, n = 50) and locals in Koyra (62.7%, n = 47). The link was denied most often by locals in Koyra (32%, n = 24), while "don't know" responses were uncommon in all subgroups. These findings suggest that migrants are more frequently exposed to or affected by tensions, especially in urban contexts.

Fig. 2 illustrates variation in perceived migration-related conflict across groups of participants; qualitative findings elaborate how conflicts are understood and manifested in everyday life. Qualitative accounts provide insight into what participants meant by "conflict": threy often described everyday disputes linked to overcrowding and pressure on shared infrastructure, particularly within shared and high-density low-income housing arrangements.

> *"In a shared living arrangement like slum, too many people live in such a small space, lots of problems come up. For example, now around 40 to 50 people share just one toilet. That's about one toilet for 10 families. Before, it was maybe 5 or 6 family per toilet. With so many using the same toilet, it gets dirty fast, and the environment also suffers. Every day, there are arguments about who goes first, who cleans it, and how to keep it working. Most of the new people coming in are from rural areas, so they are not always used to how things work in town. When we try to explain, they don't want to listen and sometimes they get angry and start fights. It's just constant stress and chaos in the neighbourhood all the time because of this."*

This account reflects a broader pattern across FGDs: competition over services such as sanitation was widely linked to heightened tensions in migrant-dense neighbourhoods.

Socio-economic variation in experiences of local conflict.

We further examined whether experience or witnessing of impact of migration on local conflict varied across socio-economic

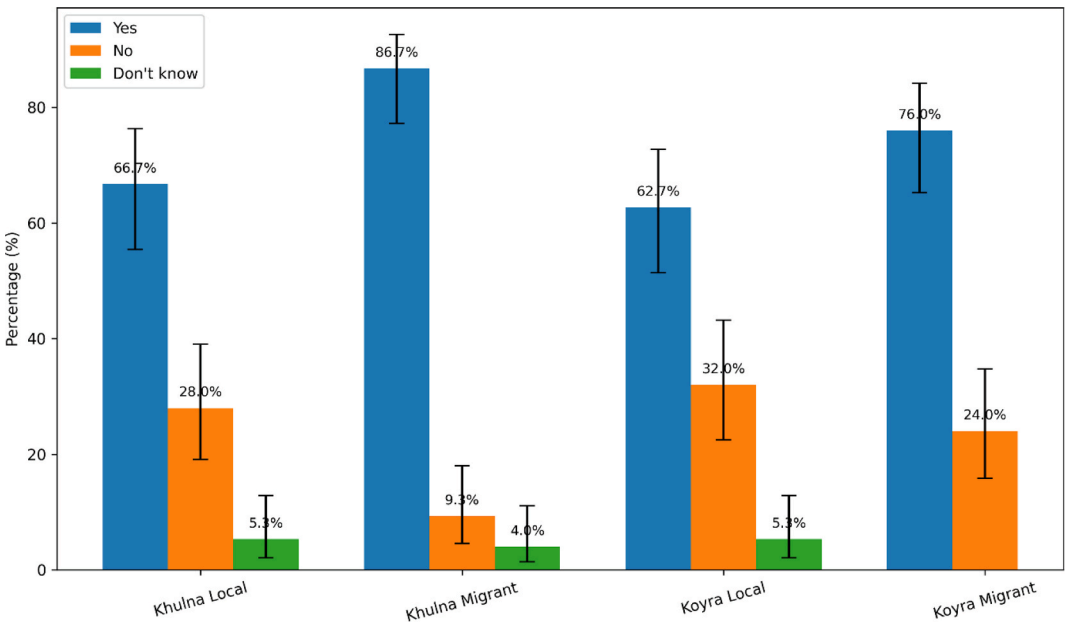

Fig. 2. Perception of impact of migration on local conflict by participant type and study area. Note: Bars represent percentages of responses, with error bars indicating 95% confidence intervals for proportions calculated using the Wilson method. No participants in the Koyra migrant group selected the "Don't know" response. The total sample size was N = 300; with 75 participants in each subgroup. .
Source: Primary household survey, 2024

characteristics. A series of chi-square test of independence were conducted to explore the associations. Household income was significantly associated with reported experiences of local conflict. For example, 58 participants (59.2%) in the lowest income group (<10,000 BDT per month) had witnessed or experienced local tensions, compared to 85 (75.2%) in the 10,000–24,999 BDT income group (χ^2 (5, N = 300) = 20.686, p < 0.001).

Educational level was also significantly associated with participants' experience of migration related local conflicts. While 61.3% of participants with less than high school (n = 65) reported experiencing or witnessing tensions, this proportion rose to 93.3% among postgraduates (n = 14) (χ2 (4, N = 300) = 16.595, p < 0.002).

To interpret these quantitative results, we drew on qualitative evidence that indicated distinct but recurring concerns across socio-economic groups. Participants with lower income and education were more concerned and aware of direct resource related tensions. Participants with higher income and more education in turn highlighted broader social and environmental issues such as perceived cultural differences, neighbourhood disturbances, overcrowding and pressure on natural resources and public services.

One of our FGD participants explained:

> *"The city is becoming too crowded now. Even educated and middle-class families are struggling – water layer is low, traffic is worse, and public services are overburdened. Many people come and don't follow the same habits or manners, which lead to arguments and tensions. Sometimes small issues turn into disputes because everyone feels irritated; the overall social atmosphere has become more strained."*

These differences shaped how conflict was understood and articulated in FGDs and KIIs.

Gender was also a significant factor. A total of 77.5% of male participants (n = 145) had witnessed or experienced local tensions, compared to 65.5% of female participants (n = 74) and this difference was statistically significant, χ^2 (1, N = 300) = 5.192, p < 0.023.

Perceived impacts of migration on local conflict.

We also explored the association of household income, gender, education and perception of migration impact on local conflict. A chi-square test revealed a statistically significant association between income level and perception of impact of migration on conflict, χ2 (10, N = 300) = 21.094, p < 0.020. For instance, 59.2% (58 out of 98) of participants in the lowest income brackets perceived such an impact, compared to 75.2% (85 out of 113) in the next income group. The association between gender and perception of impact of migration on local conflict was not statistically significant, χ2 (2, N = 300) = 5.414, p = 0.067. However, that perception increases with level of education: 76.2% of high school graduates (77of 101) considered migration to have an impact on local conflicts, compared to 89.7% of those with a bachelor's degree (35 of 39). A chi-square test confirmed a statistically significant association, χ^2 (8, N = 300) = 18.106, p < 0.020. These findings suggest that income and education shape both perception and experience of migration related local social tensions, while gender appears to play a role primarily in mentioned experiences rather than perceptions.

Participants who perceived that migration had an impact on local conflict and had experienced or witnessed social tensions (n = 219) most often highlighted increased competition for jobs, housing and public services (n = 140, 63.9%) (see Fig. 3). This was followed by perceived economic impacts on the local economy (n = 55, 25.1%) and heightened cultural or social differences (n = 24,

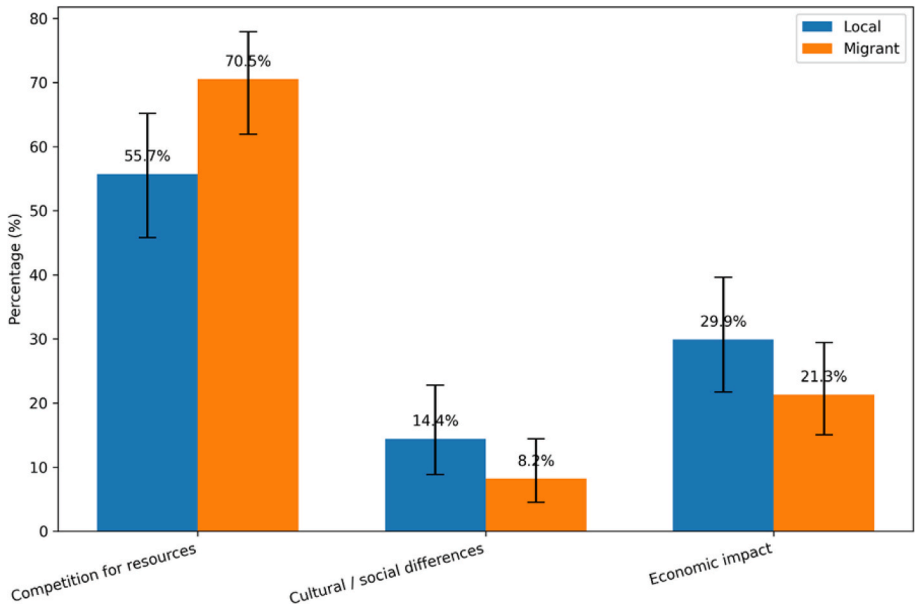

Fig. 3. Impacts of migration on local conflict reported by participants who experienced or witnessed conflict. Note: Bars represent percentages of participants selecting each reported impact category among participants who experienced or witnessed local conflict following migration. Percentages are calculated separately for local (n = 97) and migrant (n = 122) participants, combining participants from both study sites (total n = 219). Error bars indicate 95% confidence intervals for proportions calculated using the Wilson methods. .
Source: Primary household survey, 2024

11.0%) (see Fig. 3). These perceptions of impact of migration on local conflicts are rooted in lived experience.

Fig. 3 further highlights the reported impacts of migration among participants who experienced or witnessed local conflict or tension, complementing the qualitative analysis presented below. In both study sites, participants consistently framed migration-related conflict in terms of intensified competition over resources, forming one of the most prominent themes emerging from the qualitative analysis.

> *"So many people are coming to our slum now. The rent keeps going up every year because of the availability of tenants. Moreover, we all are using the same tubewell – before there was one tubewell for fewer families, now there are so many people but still just one tubewell. Because of too much pressure water level drops and in summer, it is in worst condition, we hardly get water from the tubewell. It's so hot outside, and when we come home after work there's no water. Fights start very quickly because everyone needs it at once and without water everyone get more hyper which intensifies chaos for no reason."*

This concern was further illustrated in accounts from participants living in an informal settlement (Khas land – government land where rent is not required):

> *"Many people are coming here now, so we have less space than we did before. There is chaos over every small issue. For example, there was a fight over access to grass for livestock. One resident planted grass near his house so his goats wouldn't stray too far, but other day another person came and started cutting grass. The first individual tried to talk and asked them not to do it, but it did not solve anything. The next day, they argued again. One person pushed the other, and in anger, he hit him on the neck with the back side of a sickle handle. After that, the injured man's son called people from their area, and the other side also called people. More people came, and a big fight broke out – several people were hurt, and at least three were sent to hospitals. Both sides filed cases against each other. Remarkably, before this entire altercation, no one noticed that the injury was not so serious, yet it led to a serious chaos. Eventually, the local councillor and respected community members stepped in and made both groups sit together to solve it."*

Many participants also pointed out how migration affects the local economy indirectly beyond increased competition for resources.

> *"Migrants are ready to work for lower wages than the usual local rate. To get work, they agree to less pay and longer hours. This makes it harder for local workers to demand fair wages, because employers know they can always find someone to do the same work for less. Our local shops and small business also suffer because people don't have enough money in hand anymore. Moreover, now many migrants also run small roadside shops or stalls to survive, selling things for less money. Because of this, our old local shops lose customers and struggle to keep going."*

Some participants also explained how migration has heightened cultural and social differences and created social or cultural frictions in the locality:

> *"In Khulan city now there are more migrants than local peoples. These migrants do not fear consequences or respect local customs and authority. They get involved in harassment and eve teasing, and if they face legal trouble, they just disappear because no one knows where they come from or where is the origin. Local people cannot do this – we have our families here, our homes here, so we have fear. If we do something wrong, everyone knows us. Moreover, it's not about legal trouble only – there is a social cost too, because our whole family must face people's judgement and gossip. But migrants can just flee away, and that makes us feel unsafe."*

Taken together, these accounts demonstrate how resource competition operates as a recurring mechanism through which migration is perceived to exacerbate local tensions. Table 1 presents a synthesised overview of the main variations of climate-related conflict identified in the study areas. These categories were developed through iterative analysis of survey responses, focus group discussions, and key informant interviews, and represent a refined consolidation of conflict patterns observed across the broader

Table 1
Summarises the main variations of conflict across the study areas.

Variation of Conflicts	Climate-Migration Linkage	Manifestation at Local Level
Competition over basic services	Climate hazards contribute to migration into receiving areas, increasing pressure on already limited services.	Disputes over access to water points, sanitation facilities, and shared housing spaces.
Labour market competition	Climate-related migration expands labour supply in receiving areas and inreases competition in local labour markets.	Increased competition for jobs, wage suppression, longer working hours, and employment insecurity in receiving areas.
Housing related tensions	In-migration driven by climatic stress increases demand for housing.	Rising rents, overcrowding, reduced living space, and competition for housing in migrant-dense areas.
Resource-based interpersonal disputes	Climatic stress and migration increase resource competition.	Escalation of everyday disputes over access to resources such as water or land used for livestock.
Social and cultural tensions	Migration reshapes community composition in receiving areas.	Frictions linked to perceived differences in social norms, behaviour, social practices, and community expectations between migrants and locals.
Family and domestic disputes	Migration linked to climatic and economic stress disrupts household structures.	Conflicts related to marital status, family histories, abandonment, and associated disputes affecting community relations and local government administration.
Youth-related insecurity	Livelihood insecurity associated with migration affects household coping strategies.	Concerns of youth involvement in informal or illegal activities linked to livelihood insecurity in migrant households.

research project.

Building on an earlier finding that most participants perceive migration to influence local conflict, this analysis clarifies the direction of that perception. Most participants (n = 217, 72.3%) perceived that migration exacerbates local conflicts, while a minority (n = 83, 27.7%) saw no significant impact (See Table 2). No one considered that migration alleviates conflicts. Among locals, 96 respondents (64%) considered that migration exacerbates local conflicts, compared to 54 (36%) who did not perceive significant impact. Among migrants, 121 respondents (80.7%) perceived that migration exacerbates conflicts, while 29 (19.3%) saw no significant conflicts (see Table 2). A chi-square test found a statistically significant association between the type of participants and perception of relationship between migration and local conflicts, χ^2 (1, N = 300) = 10.41, p < 0.001.

4.2. The Climate-Migration-Conflict nexus

Qualitative findings corroborated the survey results, revealing a recurring narrative in which climate hazards, migration, and local conflict were understood as interconnected processes rather than isolated phenomena. Our findings (see Table 3) suggest an indicative perceived nexus between climate change, migration, and local conflict. Most participants reported climate hazards to be a moderately influential driver of migration, while a small minority of migrants considered climate hazards to be highly influential. The majority of participants perceived that migration exacerbates local conflict: 81% of migrants and 64% of locals thought so. This perception appeared more frequently among participants in Khulna city (76%) than in Koyra Upazila (69%). Table 3 provides the full breakdown of results.

There is consistent and layered evidence of a perceived nexus between climate change, migration and conflict. Migrants are more likely than locals to perceive migration as conflict inducing, and more often report firsthand experiences of local tensions. Similar layered evidence of nexus emerged from our FGDs with both local and migrant participants and KIIs. One of our KII participant explained:

> *"Climate change, migration, and conflict are all connected to each other. People who have lost everything and then migrate often become short-tempered and involved into disputes with others for a petty issue. Poor people are already struggling, and when more people come in, it of course creates many new problems. Those who living in slums or government Khas land cannot just move somewhere else suddenly, because they don't have the means. But people who migrate for general reason like education or jobs, they are quite sensible and usually don't get involved in chaos. Moreover, they add value to our society. When there are more educated people, it does not cause problems. But when people who have lost everything come in, conflicts happen among them, and this creates different negative reactions in the community to."*

This perspective was echoed across FGDs and KIIs, indicating a shared understanding of the climate-migration-conflict nexus rather than as individual interpretation.

> *"In our area, family disputes have increased a lot because of migration. Many people come here as migrants, but we don't know their history. We have to trust them whatever they say. Some come here, get married, and start families – then after a while, their wife or children from before show up. But here they married claiming to be unmarried, which creates a lot of problems. In addition, some people get married and then suddenly run away overnight. That creates another type of problem. Because these people don't have their birth certificates, so their children can't get birth certificate without their father's one. Without birth registration, children can't get admitted to school. This way, many kinds of problems happen. Almost every day, people go to the council office to settle these issues."*

Similar concerns were raised by participants regarding the impacts of migration on the local economy by intensifying job competition in the receiving area.

> *"Our NGO needed six labourers for a project that would last two or three days. To hire them, we went to the local labour market where workers gather with their tools, like basket and shovels. About 25 to 30 labourers were waiting for work. At this labour market, workers come early and stand in a queue, and work is given based on the who arrives first. After hiring the six workers we needed, I saw that many others were still waiting. These labourers usually wait until 10 am., and if they don't get work by then, they go back home without any work of the day."*

Participants also expressed concerns about social disruption associated with migration:

> *"When migrants come to a new area, they often struggle to find steady work. When there aren't enough opportunities, some people end up getting involved in illegal activities just to survive. For example, the 'Kishor (Youth) Gang' started around 2013 or 2014 – it's made up of young boys who get organised for all kinds of criminal activities. Each gang can have 200 to 300 members doing different criminal things.*

Table 2
Perceived Nature of Migration–Conflict Relationship.

Group	Exacerbates Conflict	No Significant Impact	% Exacerbates	% No Significant Impact
Local (n = 150)	96	54	64.0%	36.0%
Migrant (n = 150)	121	29	80.7%	19.3%
Total	217	83	72.3%	27.7%

Table 3
Influence of Climatic Hazards on Migration and its Perceived Impact on Local Conflict.

Participant Group	Climate Influence on Migration	Participants (n)	Perceive Migration Exacerbates Conflict, n (%)
Local	Moderate or minimal	126	80 (63.5%)
Local	High	24	16 (66.7%)
Migrant	Moderate or minimal	102	82 (80.4%)
Migrant	High	48	39 (81.3%)

Note: Table 3 summarises perceived migration-related conflict, disaggregated by migration status and perceived climate influence on migration. In line with UK Data Service (UKDA) guidance on reporting small cell sizes, response categories with fewer than 10 observations were merged; the "moderate" category therefore includes participants reporting minimal climate influence. Results are presented descriptively and should be interpreted with caution. Percentages are calculated within rows.

> *When poor families migrate, they usually need every family member to earn something because in urban area everything has financial cost. In that situation, it's very easy for their children to fall into these gangs."*

To conclude, our findings highlight a layered set of perceptions and experiences linking climate hazards, migration, and local conflict. They exemplify how people see climate change driving migration, and how migration in turn can bring about both opportunities and tensions.

5. Discussion

Our research examined how climate change, migration, and conflict are interconnected in two climate-vulnerable places in Bangladesh. Our findings situate the perceptions and everyday experiences of locals and migrants to wider academic debates. A picture emerges that is partly consistent with existing models of the climate-migration-conflict nexus, but which also highlights new and more nuanced dynamics that extend the current understanding. In what follows, we discuss the findings in relation to our research questions.

First, a majority of our participants (73%), particularly migrants, perceived migration as a factor that exacerbates local conflict. This resonates with the direct pathway literature, which highlights that sudden demographic shifts can strain resources in destination areas (Homer-Dixon, 1994, 2010; Reuveny, 2007). But our findings also complicate deterministic "scarcity" explanations, which posit that environmental pressure alone and directly drive conflicts. While our evidence illustrates that climate hazards and resource stress are important, they do not automatically translate into disputes or violence. Rather, conflicts arise when environmental pressures intersect with urban poverty, weak infrastructure and governance failures (Issifu et al., 2022). For example, disputes around access to shared toilets or water sources reflected not only lack of resources, but the way in which this scarcity was managed or mismanaged in fragile urban areas. This resonates with Burrows and Kinney's (2016) argument that climate-migration-conflict linkages are indirect, context-specific and non-linear, and must therefore be studied through disaggregated, local-level contexts.

Second, our findings highlight the significance of socio-economic factors in shaping both perceptions and lived experiences of migration induced tensions, although these relationships are presented as indicative patterns rather than causal effects. Better education and higher income were associated with perceptions that migration exacerbates local conflicts. These results echo cross-national evidence that the relationship between climate change, migration, and conflict is conditioned by broader socio-economic structures and inequalities (Nagle Alverio et al., 2025; Tsomb et al., 2024). Gender also emerged as an important differentiating factor. Men were more likely to report interpersonal disputes in public spaces, whereas women's experiences were mediated through household and domestic struggle.

A distinct contribution of our research is the documentation of layered experiences of the climate change-migration-conflict nexus, as articulated by the participants within the study sites. Participants often distinguished between those who migrated after "losing everything" due to climatic hazards and those who moved for education, employment, or other aspirational reasons. Poorer, disaster affected migrants were often considered more likely to be drawn into frictions or disputes over scarce resources in congested urban environments. Better-off or educated migrants were viewed as integrating better or even contributing to local community.

By documenting how communities distinguish between disaster-displaced and aspirational migrants, our study introduces a novel perspective that can inform broader debates on stratification and conflict across climate-vulnerable regions. Previous studies have demonstrated that outcomes of the nexus depend on governance capacity, socio-economic fragility and context (Issifu et al., 2022; Makki et al., 2025). While recent work has begun to differentiate migrant categories and perceptions, including public attitudes toward climate and environmental migrants and migrants' own conflict perceptions (Helbling, 2020; Koubi et al., 2018; Spilker et al., 2020), this evidence provides limited insight into how stratification within communities shapes everyday experiences and conflict dynamics. For example, Freeman's (2017) scenarios and Savelli et al.'s (2023) typology highlight the importance of context, yet they do not provide community-level evidence of how internal differentiation among migrants and hosts shapes lived experiences of the nexus. Our findings advance this debate by showing that the nexus itself is mediated not only by structural and environmental conditions but also by how different categories of migrants are situated and experienced within communities.

Third, our study identifies mechanisms through which participants perceive migration to contribute to or exacerbate local conflicts: (i) competition for scarce resources (water, land, housing, jobs); (ii) downward pressure on wages and local economic marginalisation; (iii) heightened cultural and social friction; and (iv) emergence of illicit activities in precarious households. These mechanisms reflect both material and relational dimensions of conflict and align with theoretical typologies in the literature such as "conflict as a result of climate related disaster displacement (Typology 1)" and "conflict as a result of pre-existing tensions and migratory patterns interacting

with climate change (Typology 4)" (Savelli et al., 2023). While these typologies are useful for categorising these dynamics, our findings advance the literature by demonstrating how such pathways unfold in practice within a fragile urban contexts.

Our findings corroborate the literature suggesting that climate-migration-conflict linkage is driven by indirect pathways rather than direct causal chains (Abel et al., 2019; Burrows and Kinney, 2016). Our findings highlight that, in Koyra, frequent cyclones and salinity intrusion undermined traditional livelihoods, compelling households to migrate to Khulna. Once displaced, they encountered overcrowded settlements, insecure employment and social stigma – conditions that intensified competition, marginalisation, and social frictions. This moves the debate beyond conceptual models by demonstrating at the community level how climate hazards trigger migration that interacts with fragile urban systems to produce conflict.

Our study also offers contributions to the climate-migration-conflict literature. Our insights empirically support the indirect pathways argument and extend it by documenting how these pathways unfold through concrete mechanisms of urban poverty, weak infrastructure, and social stigma at the community level. It also demonstrates that climate change-migration-conflict nexus is experienced in layered and differentiated ways shaped by socio-economic status, challenging the tendency in existing literature to portrait migration as a homogenous driver of conflict. Our evidence shows the differentiated impacts of poorer and better-off migrants in the host community. This insight advances current discourse by underscoring the role of stratification in understanding the nexus. Third, by centring the voices of migrants and host community members, we unpack everyday mechanism of frictions which provides community grounded evidence that compliments and extends macro-level analysis.

Our findings highlight that migration does not inherently produce social conflict, but that unmanaged in-migration into fragile urban settings can influence social tensions and inequality. Policymakers should prioritise investments in housing, water, sanitation, and livelihoods in destination areas, while recognising that poorer, disaster-displaced groups and better-off and aspirational migrants face different challenges. The insights underscore the value of integrated governance approach that coordinate climate adaptation, displacement management, and peace-building (Borgomeo & Jägerskog, 2025).

Our study focused on two climate-vulnerable areas in Bangladesh, which may not reflect the full diversity of migration and conflict dynamics across the country or in other contexts. Khulna was selected because of its proximity to climate-affected coastal regions and its role as a regional economic hub, which attracts climate-induced migrants from surrounding area. While Dhaka and other major cities also receive substantial in-migration, including multiple urban contexts was beyond the scope of this study due to time and resource constraints. The cross-sectional design also offers only a snapshot in time and cannot track how migration – conflict dynamics evolve as climate pressures and urbanisation intensify. The analysis also focused on perceptions and self-reported experiences, which may not always align with observed behaviours or broader structural patterns. Although the study acknowledges the broader socio-political context within which climate-induced migration and conflict unfold, the analysis does not directly examine formal political processes, party politics, or national level power relations. In this study, socio-political refers primarily to community level social tensions and governance related challenges shaped by climate stress and migration, while political dynamics operate as background conditions rather than core analytical variables. Future research should include comparative approaches across different contexts. It should also combine community perspectives with longitudinal or quantitative migration and conflict data. Finally, more work is needed for further exploration of intersection factors to build a more comprehensive understanding of the climate—migration-conflict nexus.

6. Conclusion

Our research advances knowledge of the climate-migration-conflict nexus by drawing from community-level evidence from two climate vulnerable coastal areas of Bangladesh – Khulna City Corporation and Koyra Upazila. While 73% of the participants perceived indirect link between migration and conflict, our analysis reveals that conflict does not automatically result from migration itself. Instead, conflict arises from mediating pathways involving socio-economic inequality, resource competition, and institutional fragility. These results affirm that the C-M−C nexus is indirect, context-sensitive, and mediated by structural vulnerabilities rather than being a deterministic outcome of environmental stress.

Our research makes three key contributions to the literature. First, it advances empirical understanding of the that climate-migration-conflict nexus by providing granular, community-level insights that complement and refine macro-level models (e.g. Abel et al., 2019; Savelli et al., 2023). Second, it highlights the differentiated nature of the migration: poorer, disaster-displaced migrants face greater exclusion and conflict exposure than aspirational migrants moving for education or employment, highlighting how stratification shapes the nexus. Finally, by identifying concrete mechanisms such as competition over water and housing, wage suppression, and the emergence of informal conflict arenas, this research bridges theoretical taxonomies with lived realities.

From a practical standpoint, the findings imply that unregulated migration can exacerbate urban inequality and precipitate local tensions, especially in climate sensitive areas. Policymakers should invest in housing, infrastructure, livelihoods, and basic services in destination areas, alongside tailored assistance to disaster-displaced groups. Strengthening local capacity in governance, social cohesion, and dispute resolution is essential to reduce emerging tensions. Looking ahead, multi-scaler analysis integrating household data with geospatial and policy-level evidence could deepen understanding of feedback loops and temporal change. In sum, this study reinforces that addressing climate-induced mobility requires a holistic, justice-oriented framework that links environmental resilience with social stability.

CRediT authorship contribution statement

Gazi Alif Laila: Writing – original draft, Writing – review & editing, Visualization, Validation, Software, Methodology,

Investigation, Formal analysis, Data curation, Conceptualization. **James D. Ford:** Writing – review & editing, Supervision. **Diana Ivanova:** Writing – review & editing, Supervision. **Jouni Paavola:** Writing – review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

Gazi Alif Laila acknowledges support from the Bangabandhu Overseas Scholarship, University of Dhaka, for PhD studies. Jouni Paavola acknowledges the support of the UK Economic and Social Research Council (ESRC), grant/award number: ES/K006576/1 and ES/R009708/1 to the Centre for Climate Change Economics and Policy (CCCEP).

Appendix A

Table A1
Socio-economic characteristics of survey participants, n (%) Sample size: Khulna City Corporation (n = 150); Koyra Upazila (n = 150).

Characteristics	Category	Khulna City Corporation n (%)	Koyra Upazila n (%)
Gender	Male	87 (58.0)	100 (66.7)
	Female	63 (42.0)	50 (33.3)
Age group (years)	18–24	3 (2.0)	–
	25–34	34 (22.7)	25 (16.7)
	35–44	61 (40.7)	81 (54.0)
	45–54	42 (28.0)	37 (24.7)
	55–64	10 (6.7)	7 (4.7)
	65-above	–	–
Education Level	Less than high school	37 (24.7)	69 (46.0)
	High school diploma or equvalant	48 (32.0)	53 (35.3
	Some college or trade school	26 (17.3)	13 (8.7)
	Bachelor's degree	27 (18.0)	12 (8.0)
	Postgraduate degree	12 (8.0)	3 (2.0)
Occupation	Farming	2 (1.3)	35 (23.3)
	Business	5 (3.3)	4 (2.7)
	Student	2 (1.3)	–
	Retired	3 (2.0)	1 (0.7)
	NGO activist	8 (5.3)	8 (5.3)
	Homemaker	2 (1.3)	2 (1.3)
	Rickshaw puller	13 (8.7)	–
	Auto driver	–	19 (12.7)
	Fishing	–	14 (9.3)
	Van driver	–	4 (2.7)
	House assistant	15 (10.0)	7 (4.7)
	Small business	31 (20.7)	20 (13.3)
	NGO worker	10 (6.7)	4 (2.7)
	Private service	26 (17.3)	1 (0.7)
	Journalist	1 (0.7)	1 (0.7)
	Government service	4 (2.7)	6 (4.0)
	Day labour	20 (13.3)	20 (13.3)
	Tailor	8 (5.3)	4 (2.7)
Monthly household incomes (BDT)	<10,000	18 (12.0)	80 (53.3)
	10,000–24,999	65 (43.3)	48 (32.0)
	25,000–49,999	47 (31.3)	16 (10.7)
	50,000–74,999	15 (10.0)	5 (3.3)
	75,000–99,999	4 (2.7)	1 (0.7)
	≥ 100,000	1 (0.7)	–

Note: Percentages are based on valid responses and may noy sum to 100 due to rounding.

BDT refers to Bangladeshi Taka (Bangladeshi currency).

Appendix B

Table B1
Anonymozed profiles of the Key Informant Interview (KII) participants.

Role	Sector	Gender	Age range
NGO activist	NGO	Female	50–55
NGO activist	NGO	Male	35–40
Local government representatives	Government	Male	50–55
Local government representative	Government	Male	35–40
Community leader	Community	Female	50–55
Journalist	Media	Male	35–40

Appendix C

Table C1
Paraphrased summary of the survey items relevant to this paper.

Section	Survey focus	Example items in paraphrased form
Household background and socio-economic profile	Basic socio-demographic and livelihood characteristics of the participants	Questions asked about the participants age, gender, education, employment status, occupation, household income, family size, and length of residence in the study area.
Climate hazards and migration	Perceptions of major environmental stressors and their influence on migration	Questions asked about the most significant climate hazards in the study area, whether participants had experienced or witnessed climate-related events affecting migration decisions, and the extent to which climate hazards were perceived to influence migration.
Local conflict context	Presence and underlying drivers of conflict and tensions	Questions asked whether the participants observed any local conflicts or tensions in the study area and explored perceived causes, including land disputes, resource competition, economic disparities, political instability, ethnic or cultural tensions, and other local grievances.
Migration and local tensions	Perceived effects of migration on local conflict	Questions explored whether migration had affected local conflicts or tensions, including whether it increased competition over jobs, housing, or services, or heightened social and cultural differences between migrants and host communities.
Community relations and social tensions	Lived experience of migrant-host relations	Questions asked whether participants had witnessed or experienced any social tensions involving migrants and locals.
Migration-conflict relationship	Perceptions of how migration interacts with conflict	Questions asked participants how they understood the relationship between migration and local conflict, including whether migration exacerbates conflict, reduces tensions, or has no significant impact.

Appendix D. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.crm.2026.100813.

Data availability

Data will be made available on request.

References

Abel, G.J., Brottrager, M., Crespo Cuaresma, J., Muttarak, R., 2019. Climate, conflict and forced migration. Glob. Environ. Chang. 54, 239–249. https://doi.org/10.1016/j.gloenvcha.2018.12.003.

Adams, C., Ide, T., Barnett, J., Detges, A., 2018. Sampling bias in climate–conflict research. Article 3 Nat. Clim. Chang. 8 (3). https://doi.org/10.1038/s41558-018-0068-2.

Agresti, A., Coull, B.A., 1998. Approximate is Better than "exact" for Interval Estimation of Binomial Proportions. The American Statistician 52 (2), 119–126. https://doi.org/10.1080/00031305.1998.10480550.

Ahmed, A., Ghosh, P.K., Hasan, M., Rahman, A., 2020. Surface and groundwater quality assessment and identification of hydrochemical characteristics of a south-western coastal area of Bangladesh. Environ. Monit. Assess. 192 (4), 258. https://doi.org/10.1007/s10661-020-8227-0.

Alam, M.M., Zakaria, A.F.M., 2021. *A Probit Estimation of Urban Bases of Environmental Awareness: Evidence from Sylhet City*. Bangladesh arXiv:2107.08342, arXiv. https://doi.org/10.48550/arXiv.2107.08342.

Balsari, S., Dresser, C., Leaning, J., 2020. Climate Change, Migration, and Civil Strife. Curr. Environ. Health Rep. 7 (4), 404–414. https://doi.org/10.1007/s40572-020-00291-4.

Barnett, J., 2003. Security and climate change. Glob. Environ. Chang. 13 (1), 7–17. https://doi.org/10.1016/S0959-3780(02)00080-8.
Barnett, J., Adger, W.N., 2007. Climate change, human security and violent conflict. Polit. Geogr. 26 (6), 639–655. https://doi.org/10.1016/j.polgeo.2007.03.003.
Bashir, N., 2023. Community Gatekeepers: Power, pitfalls and Possibilities when Recruiting and Researching Black, asian, and Minority Ethnic (BAME) Participants. Qual. Rep. https://doi.org/10.46743/2160-3715/2023.5549.
BBS. (2022). *Statistical Yearbook Bangladesh 2022*. Bangladesh Bureau of Statistics (BBS),. https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/b2db8758_8497_412c_a9ec_6bb299f8b3ab/2023-06-26-09-19-2edf60824b00a7114d8a51ef5d8ddbce.pdf.
Best, K., Gilligan, J., Mallick, B., 2025. Economic inequality is a crucial determinant of observed patterns of environmental migration. Commun. Earth Environ. 6 (1), 196. https://doi.org/10.1038/s43247-025-02177-5.
Borgomeo, E., Jägerskog, A., 2025. Pathways to respond to climate change, forced displacement, and conflict challenges. Environ. Secur. 3 (2), 220–231. https://doi.org/10.1177/27538796251328775.
Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3 (2), 77–101. https://doi.org/10.1191/1478088706qp063oa.
Braun, V., Clarke, V., 2021. *Thematic Analysis: a Practical Guide*, (1st edn). SAGE Publications Ltd.
Brown, L.D., Cai, T.T., DasGupta, A., 2001. Interval Estimation for a Binomial Proportion. Stat. Sci. 16 (2), 101–117. https://www.jstor.org/stable/2676784.
Bruch, C., Matthew, R., 2025. Reimagining the environment-migration-conflict nexus. Environ. Secur. 3 (2), 123–133. https://doi.org/10.1177/27538796251342130.
Brzoska, M., Fröhlich, C., 2016. Climate change, migration and violent conflict: Vulnerabilities, pathways and adaptation strategies. Migr. Dev. 5 (2), 190–210. https://doi.org/10.1080/21632324.2015.1022973.
Buhaug, H., 2010. Climate not to blame for african civil wars. PNAS 107 (38), 16477–16482. https://www.jstor.org/stable/20779692.
Buhaug, H., Nordkvelle, J., Bernauer, T., Böhmelt, T., Brzoska, M., Busby, J. W., Ciccone, A., Fjelde, H., Gartzke, E., Gleditsch, N. P., Goldstone, J. A., Hegre, H., Holtermann, H., Koubi, V., Link, J. S. A., Link, P. M., Lujala, P., O'Loughlin, J., Raleigh, C., … von Uexkull, N. (2014). One effect to rule them all? A comment on climate and conflict. *Climatic Change*, *127*(3), 391–397. Doi: 10.1007/s10584-014-1266-1.
Burrows, K., Kinney, P.L., 2016. Exploring the climate Change, Migration and Conflict Nexus. Article 4 Int. J. Environ. Res. Public Health 13 (4). https://doi.org/10.3390/ijerph13040443.
Castro, F.G., Kellison, J.G., Boyd, S.J., Kopak, A., 2010. A Methodology for Conducting Integrative mixed Methods Research and Data analyses. J. Mixed Methods Res. 4 (4), 342–360. https://doi.org/10.1177/1558689810382916.
Cattaneo, C., Bosetti, V., 2017. Climate-induced International Migration and Conflicts. CESifo Econ. Stud. 63 (4), 500–528. https://doi.org/10.1093/cesifo/ifx010.
Clement, Viviane, Rigaud, Kanta Kumari, de Sherbinin, Alex, Jones, Bryan, Adamo, Susana, Schewe, Jacob, Sadiq, Nian, Shabahat, E., 2021. *Groundswell Part 2: Acting on Internal Climate Migration.* The World Bank, Washington DC. https://documents1.worldbank.org/curated/en/837771631204427139/pdf/Groundswell-Part-II-Acting-on-Internal-Climate-Migration.pdf http://hdl.handle.net/10986/36248 License: CC BY 3.0 IGO.
Creswell, J.W., Plano Clark, 2018. Designing and conducting mixed methods research, third ed. International student edition. SAGE.
Creswell, J.W., Poth, C.N., 2023. *Qualitative Inquiry and Research Design: Choosing among five Approaches*, 5th edn. SAGE Publications, Inc. https://www.perlego.com/book/4533796/qualitative-inquiry-and-research-design-choosing-among-five-approaches-pdf.
Fereday, J., Muir-Cochrane, E., 2006. Demonstrating Rigor using Thematic Analysis: a Hybrid Approach of Inductive and Deductive Coding and Theme Development. Int. J. Qual. Methods 5 (1), 80–92. https://doi.org/10.1177/160940690600500107.
Freeman, L., 2017. Environmental Change, Migration, and Conflict in Africa: a critical Examination of the Interconnections. J. Environ. Dev. 26 (4), 351–374. https://doi.org/10.1177/1070496517727325.
German Advisory Council on Global Changes (WBGU), 2008. *World in Transition: Climate Change as a Security Risk*. https://www.wbgu.de/en/publications/publication/welt-im-wandel-sicherheitsrisiko-klimawandel.
Ghimire, R., Ferreira, S., Dorfman, J.H., 2015. Flood-Induced Displacement and Civil Conflict. World Dev. 66, 614–628. https://doi.org/10.1016/j.worlddev.2014.09.021.
Gleditsch, N.P., 1998. Armed Conflict and the Environment: a Critique of the Literature. J. Peace Res. 35 (3), 381–400. https://doi.org/10.1177/0022343398035003007.
Hartmann, B., 2010. Rethinking climate refugees and climate conflict: Rhetoric, reality and the politics of policy discourse. J. Int. Dev. 22 (2), 233–246. https://doi.org/10.1002/jid.1676.
Helbling, M., 2020. Attitudes towards climate change migrants. Clim. Change 160 (1), 89–102. https://doi.org/10.1007/s10584-020-02697-3.
Helman, D., Zaitchik, B.F., Funk, C., 2020. Climate has contrasting direct and indirect effects on armed conflicts. Environ. Res. Lett. 15 (10), 104017. https://doi.org/10.1088/1748-9326/aba97d.
Hermans, K., Ide, T., 2019. Advancing research on climate change, conflict and migration. *DIE ERDE –*. Article 1 Journal of the Geographical Society of Berlin 150 (1). https://www.die-erde.org/index.php/die-erde/article/view/411.
Homer-Dixon, T.F., 1991. On the Threshold: Environmental changes as Causes of Acute Conflict. Int. Secur. 16 (2), 76–116. https://doi.org/10.2307/2539061.
Homer-Dixon, T.F., 1994. Environmental Scarcities and Violent Conflict: evidence from cases. Int. Secur. 19 (1), 5–40. https://doi.org/10.2307/2539147.
Homer-Dixon, T.F., 2010. *Environment, Scarcity, and Violence*. Princeton University Press. https://doi.org/10.1515/9781400822997.
Ide, T., Brzoska, M., Donges, J.F., Schleussner, C.-F., 2020. Multi-method evidence for when and how climate-related disasters contribute to armed conflict risk. Glob. Environ. Chang. 62, 102063. https://doi.org/10.1016/j.gloenvcha.2020.102063.
IPCC. (2022). *Climate Change 2022: Impacts, adaptation and vulnerability: Working group II contribution to the sith assessment report of the intergovernmental panel on climate change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]*. [Report]. Cambridge University Press. https://oceanrep.geomar.de/id/eprint/57717/.
Islam, M. R. (2023). *Climate Change, Migration and Conflict in Bangladesh*. Routledge India. Doi: 10.4324/9781003430629.
Islam, M.R., Hasan, M., 2016. Climate-induced human displacement: a case study of Cyclone Aila in the south-west coastal region of Bangladesh. Natural Hazards (dordrecht) 81 (2), 1051–1071. https://doi.org/10.1007/s11069-015-2119-6.
Issifu, A.K., Darko, F.D., Paalo, S.A., 2022. Climate change, migration and farmer–herder conflict in Ghana. Conflict Resolution Quarterly 39 (4), 421–439. https://doi.org/10.1002/crq.21346.
Koubi, V., Böhmelt, T., Spilker, G., Schaffer, L., 2018. The Determinants of Environmental Migrants' Conflict perception. Int. Organ. 72 (4), 905–936. https://doi.org/10.1017/S0020818318000231.
Krampe, F., O'Driscoll, D., Johnson, M., Simangan, D., Hegazi, F., de Coning, C., 2024. Climate change and peacebuilding: Sub-themes of an emerging research agenda. Int. Aff. 100 (3), 1111–1130. https://doi.org/10.1093/ia/iiae057.
Krendelsberger, A., Alpizar, F., Syll, M.M.A., van Dijk, H., 2025. Climate change, collective shocks, and intra-community cooperation: evidence from a public good experiment with farmers and pastoralists. World Dev. 189, 106941. https://doi.org/10.1016/j.worlddev.2025.106941.
Laila, G.A., Ford, J.D., Ivanova, D., Paavola, J., 2025. Rethinking migration in a changing climate: Multifaceted and interconnected drivers and adaptive strategies in Bangladesh. Int. J. Disaster Risk Reduct. 126, 105646. https://doi.org/10.1016/j.ijdrr.2025.105646.
Mach, K.J., Kraan, C.M., Adger, W.N., Buhaug, H., Burke, M., Fearon, J.D., Field, C.B., Hendrix, C.S., Maystadt, J.-F., O'Loughlin, J., Roessler, P., Scheffran, J., Schultz, K.A., von Uexkull, N., 2019. Climate as a risk factor for armed conflict. Nature 571 (7764), 193–197. https://doi.org/10.1038/s41586-019-1300-6.
Mahmud, A., Sikder, S., Joardar, J.C., 2020. Assessment of groundwater quality in Khulna city of Bangladesh in terms of water quality index for drinking purpose. Appl Water Sci 10 (11), 226. https://doi.org/10.1007/s13201-020-01314-z.
Makki, M., Butt, F.A., Akash, S.A., Petrova, K., Naeem, S.A., 2025. Fragile Geographies and the Climate-Conflict Nexus: investigating Climate-Induced Security risks, Migration, and Inequality in Balochistan. Pakistan. Alternatives 50 (2), 350–375. https://doi.org/10.1177/03043754241291728.
Mamdani, M., 1999. Preliminary Thoughts on the Congo Crisis. Social Text 60, 53–62. https://www.jstor.org/stable/466862.
Matthew, R.A., 2008. *Resource Scarcity: responding to the Security Challenge*. International Peace Institute.

Nagle Alverio, G., Sowers, J., Weinthal, E., 2025. Climate change, conflict, and urban migration. Environ. Secur. 3 (2), 134–155. https://doi.org/10.1177/27538796241259242.

Noorana. (2024). Shaping Climate Migration in Bangladesh: Conflict and Violence Disputes | SpringerLink. In *Ullah, A.A. (eds) Handbook of Migration, International Relations and Security in Asia.* Springer, Singapore. https://link.springer.com/rwe/10.1007/978-981-99-8001-7_96-1?fromPaywallRec=false.

O'Loughlin, J., Linke, A.M., Witmer, F.D.W., 2014. Effects of temperature and precipitation variability on the risk of violence in sub-Saharan Africa, 1980-2012. PNAS 111 (47), 16712–16717. https://www.jstor.org/stable/43279377.

Patton, M.Q., 2015. *Qualitative research & evaluation methods: Integrating theory and practice* (fourth edition.). SAGE Publications Inc.

Petrova, K., 2021. Natural hazards, internal migration and protests in Bangladesh. J. Peace Res. 58 (1), 33–49. https://doi.org/10.1177/0022343320973741.

Přívara, A., Přívarová, M., 2019. Nexus between climate Change, Displacement and Conflict. Article 20 Afghanistan Case. Sustainability 11 (20). https://doi.org/10.3390/su11205586.

Prunier, G., 2009. *From genocide to continental war: the 'congolese' conflict and the crisis of contemporary Africa*. Hurst. https://cir.nii.ac.jp/crid/1130282270064202624.

Raleigh, C., Urdal, H., 2007. Climate change, environmental degradation and armed conflict. Political Geography, Climate Change and Conflict 26 (6), 674–694. https://doi.org/10.1016/j.polgeo.2007.06.005.

Reuveny, R., 2007. Climate change-induced migration and violent conflict. Political Geography, Climate Change and Conflict 26 (6), 656–673. https://doi.org/10.1016/j.polgeo.2007.05.001.

Reuveny, R., 2008. Ecomigration and Violent Conflict: Case Studies and Public Policy Implications. Hum. Ecol. 36 (1), 1–13. https://www.jstor.org/stable/27654252.

Ronco, M., Tárraga, J.M., Muñoz, J., Piles, M., Marco, E.S., Wang, Q., Espinosa, M.T.M., Ponserre, S., Camps-Valls, G., 2023. Exploring interactions between socioeconomic context and natural hazards on human population displacement. Nat. Commun. 14, 8004. https://doi.org/10.1038/s41467-023-43809-8.

Roy, T., Hasan, M. K., & Sony, M. M. A. A. M. (2022). Climate Change, Conflict, and Prosocial Behavior in Southwestern Bangladesh: Implications for Environmental Justice. In D. Madhanagopal, C. T. Beer, B. R. Nikku, & A. J. Pelser (Eds), *Environment, Climate, and Social Justice: Perspectives and Practices from the Global South* (pp. 349–369). Springer Nature. Doi: 10.1007/978-981-19-1987-9_17.

Saha, S.K., 2017. Cyclone Aila, livelihood stress, and migration: Empirical evidence from coastal Bangladesh. Disasters 41 (3), 505–526. https://doi.org/10.1111/disa.12214.

Salehyan, I., 2008. From climate Change to Conflict? No Consensus yet. J. Peace Res. 45 (3), 315–326. https://doi.org/10.1177/0022343308088812.

Sarkar, S.K., Rahman, M.A., Esraz-Ul-Zannat, Md., Islam, M.F., 2020. Simulation-based modeling of urban waterlogging in Khulna City. J. Water Clim. Change 12 (2), 566–579. https://doi.org/10.2166/wcc.2020.256.

Savelli, A., Schapendonk F, F., Gupta, T. D., Pacillo, G., & Läderach, P. (2023). Climate change, mobility and violent conflict: A typology of interlinked pathways - University of Leeds. *International Development Planning Review : IDPR*, *45*(4), 403–436. Doi: 10.3828/idpr.2023.2.

Scheffran, J., Guo, W., Krampe, F., Okpara, U., 2025. Tipping cascades between conflict and cooperation in climate change. Earth Syst. Dyn. 16 (4), 1197–1219. https://doi.org/10.5194/esd-16-1197-2025.

Selby, J., Dahi, O.S., Fröhlich, C., Hulme, M., 2017. Climate change and the Syrian civil war revisited. Polit. Geogr. 60, 232–244. https://doi.org/10.1016/j.polgeo.2017.05.007.

Selby, J., Hoffmann, C., 2014. Rethinking climate Change, Conflict and Security. Geopolitics 19 (4), 747–756. https://doi.org/10.1080/14650045.2014.964866.

Shaibur, M.R., Parvin, S., Ahmmed, I., Rahaman, M.H., Das, T.K., Sarwar, S., 2021. Gradients of salinity in water sources of Batiaghata, Dacope and Koyra Upazila of coastal Khulna district. Bangladesh. Environmental Challenges 4, 100152. https://doi.org/10.1016/j.envc.2021.100152.

Spilker, G., Nguyen, Q., Koubi, V., Böhmelt, T., 2020. Attitudes of urban residents towards environmental migration in Kenya and Vietnam. Nat. Clim. Chang. 10 (7), 622–627. https://doi.org/10.1038/s41558-020-0805-1.

Sultan, S.M.N., Maharjan, K.L., 2022. Cyclone-Induced disaster loss Reduction by Social Media: a Case Study on Cyclone Amphan in Koyra Upazila, Khulna District. Bangladesh. Sustainability 14 (21), 13909. https://doi.org/10.3390/su142113909.

Tashmin, N., & Islam, M. S. (2022). Climate Change Induced Socio-economic Vulnerability- A Case Study for Koyra Upazila, Khulna, Bangladesh. *The Dhaka University Journal of Earth and Environmental Sciences*, *11*(2), Article 2. (Bangladesh). Doi: 10.3329/dujees.v11i2.68858.

Tracy, S.J., 2010. Qualitative Quality: eight "Big-Tent" Criteria for Excellent Qualitative Research. Qual. Inq. 16 (10), 837–851. https://doi.org/10.1177/1077800410383121.

Tsomb, E.I.B.T., Nsoga, M.H.I.N., Bitting, C.D., 2024. Climate change vulnerability and conflicts in Africa: evidence from the migrations channel. Environ. Dev. Sustain. 26 (7), 18811–18854. https://doi.org/10.1007/s10668-023-03417-4.

von Uexkull, N., Buhaug, H., 2021. Security implications of climate change: a decade of scientific progress. J. Peace Res. 58 (1), 3–17. https://doi.org/10.1177/0022343320984210.

Watson, T., Lenton, T., de Campos, R.S., 2023. The climate change, conflict and migration nexus: a holistic view. Clim. Resilience Sustainability 2 (2), e250.

Wilson, E.B., 1927. Probable Inference, the Law of Succession, and Statistical Inference. J. Am. Stat. Assoc. 22 (158), 209–212. https://doi.org/10.2307/2276774.