EDITORIAL

Environmental non-migration: framework, methods, and cases

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Climate change discourses occasionally describe migration as an adaptation strategy for people at risk (Hunter et al. 2015; Black et al. 2011; Adger et al. 2021). On the other hand, there are also claims suggesting that non-migration can represent an adaptation strategy (Blondin 2021; Pemberton et al. 2021; Mallick et al. 2021) as not all households that face environmental challenges engage in movement (e.g., Adams 2016; Mallick and Schanze 2020). Existing research demonstrates that extreme environmental events aggravate pre-existing vulnerabilities (Adger et al. 2021) and also influence the process through which environmental stress influences migration decisions (Hunter et al. 2021; Khatun et al. 2022). When households do not move in the face of stress (i.e., "non-migration"), it is often assumed that staying in place is the result of a lack of migration options (Mallick and Schanze 2020). Yet such a perspective implies that households would choose to migrate—or send a household member elsewhere—if able. Yet apart from anecdotal evidence, there is little systematic research on the scope, magnitude, and causal mechanisms of non-migration, nor investigation of effective policy and programs in response to household choices. Thus, scholarship on non-migration is needed to facilitate the development of *theoretical frameworks*, and *methodological tools*, and understanding of the determinants of non-migration decisions. Such insights are essential for risk management and climate change adaptation planning.

This Topical Collection is based on the contributions from the first-ever international conference on "Environmental Non-Migration: Framework, Methods and Cases" held on 19–21 June 2019 at Technische Universitaet Dresden, Germany. The conference provided a forum for exchange and discussion on the factors influencing, and capacities of, individuals, households, and communities regarding staying in place despite environmental threats. The nine resulting articles published in this Topical Collection are organized into two categories: (1) *reviews of the environmental non-migration concept* and (2) *empirical examples of the factors, opportunities, and threats related to non-migration decisions*. Case studies are primarily from climate-vulnerable regions such as Bangladesh, India, Mexico, and Chili. Overall, this Topical Collection reflects on environmental non-migration decision-making as situated between uncertainty and bounded rationality, a growing theme in the environmental migration discourse.

Reviews of the concept of environmental non-migration

The concept of environmental non-migration is relatively new and, as such, there is little empirical research on the subject. As critical contributions, three of the nine contributions herein represent useful conceptual reviews, particularly important contributions for emerging topical areas. Based on knowledge from environmental migration studies, Zickgraf (2021) explores non-migration decision-making patterns and consequences with specific analysis of three frameworks: (1) the New Economics of Labour Migration, (2) the aspirations-(cap)abilities framework, and (3) the mobilities paradigm. Each is usefully linked to immobility despite risk. Thus, she claims that future studies should theorize and analyze the entire mobility spectrum in the face of environmental change rather than considering immobility as a separate outcome. And such, a holistic approach to analyzing the theories of non-migration decision-making, patterns, and results may benefit from concepts, ideas, and evidence from environmental and disaster studies.

This article is part of the Topical Collection on *Environmental Non-Migration: Frameworks, Methods, and Cases*

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Czaika and Reinprecht (2022) explain voluntary staying by exploring individual heuristics and cognitive dispositions as related to risk perceptions. They argue that non-migration is not entirely due to lack of information, material resources, or irrationality. Instead, risk perception plays a significant role in mobility decision-making. Search and decision heuristics factor into risk perception as would-be migrants organize, reformulate, and select information on alternative options. Czaika and Reinprecht's (2022) contribution helps reduce uncertainty in modeling and scenario building in that agent-based modelers can use cognitive biases and decision heuristics to forecast future human (im)mobility.

While the previous two papers propose analytical approaches for understanding environmental non-migration, Balgah and Kimengsi (2022) present a review paper on a variety of studies on environmental non-migration in Africa. Employing content and inter-rater reliability (IRR) analysis, they identify the key drivers of environmental non-migration decisions. Balgah and Kimengsi (2022) engage the Foresight conceptual framework of environmental migration (Foresight 2011) and find that social factors, particularly place attachment and cultural milieu, are prime factors of staying. However, environmental factors are also influential. Given the limited literature on environmental non-migration decisions in Africa, they urge expansion of theoretical and empirical non-migration research across Africa to inform policy decisions better.

Empirical examples of factors, opportunities, and threats related to non-migration decisions

Sengupta and Samanta (2022) employ a mixed-method approach to investigate how people at a coastal village in the Sundarbans region of India readjust themselves to increasing environmental risk and remain voluntarily immobile despite diverse stressors. They find that livelihood diversification is key to residents' staying motivations. Sengupta and Samanta (2022) explain that circular migration is an adaptive strategy to overcome environmental devastation. Such translocal livelihoods allow origin-based dependents to stay while migrants send remittances. In addition, social capital and local-led adaptation by local-level institutions also support non-migration decisions.

Furlong et al. (2022) make important contributions regarding the gender dimensions of non-migration. They employ unique, ethnographic data collected from Bangladesh to analyze the emotions of women and men with different mobility experiences. In particular, Furlong et al. (2022) investigate social and cultural norms and values, as well as individual emotions of belongingness, attachment, and loyalty. Their findings suggest that non-migration for women is dictated by the options available to family members, and

that, sometimes, women are involuntary non-migrants with desires to move. Still, the patriarchal society constrains their options and controls their realities.

In another case study in Bangladesh, Ahsan et al. (2022) explore the determinants of voluntary non-migration decisions through analysis of a large-scale quantitative survey. Almost 88% of their respondents were voluntary non-migrants because they received local support from various institutions during the periods of environmental stress. In this way, voluntary non-migrants enjoyed higher socio-economic and sociopsychological advantages compared to those involuntary staying. Ahsan et al. (2022) also find that strong social networks, access to natural resources, and community cohesion create motivations for voluntary non-migration despite risks.

An ongoing question, however, is why communities stay in the face of environmental risk even when government supports out-migration or resettlement. To explore this paradox, Wiegel et al. (2021) present empirical evidence from Villa Santa Lucía in Chilean Patagonia, where the local population rejected relocation policies after a mudslide severely damaged the village in December 2017. Their findings show the rejection of resettlement or relocation opportunities is not based on the lack of capabilities to move. Instead, a fundamentally different risk assessment is grounded in locally specific social representations of nature and human-nature relations. The researchers conclude that local sense-making is essential to understanding environmental non-migration.

Of course, non-migration decisions are complex and it is not feasible to examine them with a single analytical method. Best et al. (2022) offer an innovative perspective by taking a machine learning approach to the prediction of environmental migration. They applied random forest models to a household survey of migration in Bangladesh to identify the salient variables that influence mobility motivations. Results suggest that lower economic resources reduce migration indicating an element of trapping. They also found that a higher number of dependents in the family increases mobility by representing alternative livelihood opportunities outside the origin. The analysis did, however, also illustrate an important trade between predictive ability and interpretability, a lesson of critical important to migration modelers.

Another quantitative approach is taken by DeWaard et al. (2022) who engage the Mexican Family Life Survey (MxFLS) to identify trapped populations. They followed five steps of identifying non-migrants: (i) past-time points and non-migration intervals, (ii) presence of climate and environmental stressors, (iii) actors without capacity and with the intention to migrate, (iv) retrospective identification of involuntary non-migrants, and (v) prospective identification of involuntary non-migrants. These steps provide a useful empirical tool for the identification of trapped populations, and one that is data-driven, flexible, and customizable. Based on the analysis, DeWaard et al. (2022) suggest

several essential avenues for future research in involuntary non-migration including improved conceptual understandings of trapped populations.

Conclusion

Environmental non-migration is an emerging area of scholarship and this Topical Collection offers an important contribution. The variety of included manuscripts reflect the diversity of factors shaping non-migration and the variation in non-migration's presence across contexts. Importantly, the papers also demonstrate the intersectionality and inequality of non-migration decision-making in climate-vulnerable regions. Overall, this Topical Collection presents theoretical engagement for understanding multiple forms of non-migration; insight into the determinants and timing of environmental non-migration; and implications across micro-, meso-, and macro-scales. Taken together, this important collection grounds future research to maximize consistent, cooperation, and comprehensiveness in future investigations of environmental non-migration.

Data Availability Data will be available upon request. Correspondence and requests for materials should be addressed to Bishawjit Mallick.

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