



Toward a climate mobilities research agenda: Intersectionality, immobility, and policy responses

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ABSTRACT

Mobility is a key livelihood and risk management strategy, including in the context of climate change. The COVID-19 pandemic has reinforced long standing concerns that migrant populations remain largely overlooked in economic development, adaptation to climate change, and spatial planning. We synthesize evidence across multiple studies that confirms the overwhelming preponderance of in-country and short distance rather than international migration in climate change hotspots in Asia and Africa. The emerging findings highlight the critical importance of addressing immobility and the intersecting social determinants that influence who can move and who cannot in development policy. This evidence suggests a more focused climate mobilities research agenda that includes understanding multiple drivers of mobility and multi-directional movement; intersecting social factors that determine mobility for some and immobility for others; and the implications for mobility and immobility under climate change and the COVID-19 recovery.

1. Introduction

Mobility is a phenomenon central to every society in scales that range from meters and days, to thousands of kilometers and whole lifetimes (Meehan et al., 2017). As a livelihood strategy, mobility is used to make the most of opportunities and to spread risks in the context of changing environmental and social pressures (de Haas, 2009; McLeman and Hunter, 2010; Black et al., 2011) and personal aspirations (Wiederkehr et al., 2019; Rao et al., 2020) over an individual's life-course. Today, climate change is contributing toward livelihoods becoming increasingly *trans*-locational (Sakdapolrak et al., 2016; Etzold, 2017) in every corner of the world. The world is on track to significantly exceed the Paris Agreement target of remaining well below 2 °C temperature increase by 2030 (IPCC, 2019; United Nations Environment Programme, 2019). In the absence of mitigation, settlements where between one to three billion people currently live could be exposed to the highest temperature increases in the past six millennia (Xu et al., 2020). Although the numbers are contested, studies have estimated that up to

150 million people could move due to environmental and climate pressures by 2050 (Stern, 2005; Rigaud et al., 2018). Whatever the numbers, there is little doubt that climate change will alter the context in which livelihoods take place and in which decisions to move or not are made. In this context, anticipatory support for the inevitable adaptations that will be required, including human mobility, is an urgent policy imperative.

COVID-19 has laid bare the dangers of failing to account for migration in development and social protection policies (Dhungana, 2020; Kandikuppa and Gupta, 2020; Sengupta and Jha, 2020; Suhardiman et al., 2020; Suresh et al., 2020). Social protection refers to transfers of funds and resources to the poor, and is intended to protect vulnerable or marginalized populations from livelihood risks, with the overall objective of reducing vulnerability (Devereux and Sabates-Wheeler, 2004). For migrant populations, social protection mediates risks for people in current circumstances of uncertainty, but also mediates the long-term negative impacts of weather-related disasters (Kosec and Mo, 2017). Yet, migrant populations are often excluded from social protection,

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access to public services and economic opportunities, including through residency and population registration requirements (Hopkins, Bastagli and Hagen-zanker, 2016). During the COVID-19 pandemic, exposure to health and sanitation risks, and lack of access to social protection, have highlighted the vulnerability of migrants working in the informal sector in countries where internal migration is prevalent (as starkly documented, for example, in India (Kandikuppa and Gupta, 2020) and Bangladesh (Siddiqui et al., 2020). These experiences have underscored the urgent need to understand drivers, patterns, and outcomes of mobility, particularly for vulnerable populations (Guadagno, 2020; McAuliffe, 2020; Shi and Liu, 2020; World Bank, 2020). Indeed, the COVID-19 pandemic has shone a spotlight on the consequences of many years of resisting recognition of mobility in public policy and planning in general, and in-country short distance migration in particular (World Bank, 2020).

The term human mobility refers to both voluntary movement and involuntary or survival displacement, as well as interventions by governments that resettle and shape the locations where people move (commonly referred to as planned relocation) (McMichael, 2020). Whatever level of voluntarism or coercion, it is as important to understand the pressures and outcomes for those who move, as it is to understand the same for those who choose not to, or who are unable to, move despite being at risk (Black et al., 2013; Tebboth, Conway and Adger, 2019). In other words, immobility is as important as mobility. In this paper we report on recent mobilities research in climate change hotspots conducted through the Collaborative Adaptation Research Initiative in Africa and Asia (De Souza et al., 2015; Szabo et al., 2016; Cochrane et al., 2017) to identify empirically-based priorities for mobilities research that can support development policy in the context of a changing climate and the social and economic recovery from the COVID-19 pandemic. We synthesize previously separate findings from multiple studies of migration in densely populated low-lying coastal areas, semi-arid regions, and glacier- and snowpack-dependent river basins. We use this synthesis to explore the link between migration and climate change, where migrants move to, and the intersecting factors that determine who moves. This analysis leads us to conclude with recommendations for a mobilities research agenda that explicitly supports outcomes for the most vulnerable. We extend long standing arguments for a move away from an emphasis on reducing the volume and direction of movement, and on multiple drivers of migration, including environmental degradation, economic and political changes (Tacoli, 2009). We argue for a more focused research agenda that explicitly recognizes the role of short distance migration, and the intersecting social factors that influence who can move and who cannot as a cornerstone for anticipatory policy interventions that build resilience to future climate change (Adger et al., 2020) in the context of a COVID 19 recovery.

2. It is not only about climate: Even in climate change hotspots, climate change is rarely the primary reason for migration

Environmental risks leading to loss of productivity or long-term decline are just one of many factors behind decisions to move by individuals (Hoffmann et al., 2020; Kaczan and Orgill-Meyer, 2020; McMichael et al., 2020). Climate change and other environmental push factors are seldom identified by migrants as the primary factor behind decisions to migrate, even in regions exposed to high levels of climate hazard (Abu, Codjoe and Sward, 2014; Koubi et al., 2016).

In a survey of 2310 households across three low lying non-urban coastal areas in India and Bangladesh, for example, less than 3 percent of respondents identified environmental change or stress as the main reason for their migration (Safra de Campos et al., 2020). Rather, economic factors such as employment, and social factors such as education, marriage and health are consistently perceived to be principal motivations for migration. Similarly, surveys covering 9440 households across three South Asian climate change hotspots found that economic factors such as employment opportunities elsewhere were the primary driver

behind migration, and this was consistent across semi-arid plateaus (55 percent); semi-arid plains (82 percent); deltas (48 percent); and glacier- and snowmelt-dependent river basins (44 percent) (Maharjan et al., 2020a). However, temporary displacement as a result of extreme events such as floods and extreme rainfall can be directly attributed to environmental factors, and this has been reported by 10 percent of households surveyed in glacier- and snowmelt-dependent river basins in the same region (Maharjan et al., 2018).

Nevertheless, environmental factors such as resource degradation, increasing climate variability, and extreme events are identified by migrants as creating more insecure livelihoods (DECCMA, 2019). For example, in coastal regions migrants identify livelihood insecurity increasing due to exposure to environmental stressors such as drought, floods, erosion and storm surges, and more than one third of surveyed migrants identified these threats as increasing either in terms of frequency or severity (Safra de Campos et al., 2020). Environmental pressures such as climate change therefore constitute an indirect driver of migration and a ‘threat multiplier’ in contexts of pre-existing social vulnerabilities (Singh, 2019; Hoffmann et al., 2020).

A climate mobilities research agenda for the global South can, and needs to, move beyond a focus on the relative role of climate change in migration (Singh et al., 2019). Rather, a major research unknown is how multiple drivers interact with one another, in the context of intersecting social vulnerabilities, to render some people mobile and others immobile.

3. Do not be distracted by political interest in international migration: Most migrants remain within their country of origin

International policy discourse on climate-induced migration and displacement tends to be dominated by concerns about international migration from the global South to the global North, and the potential for large numbers of so-called climate refugees (Bettini, Nash and Gioli, 2017). The emphasis on forced displacement and international migration linked directly to climate change has persisted despite a distinct lack of evidence for the scale of such concerns (Boas, 2019; McLeman, 2019). Indeed, most evidence on actual flows to date indicates that climate-linked migration is more likely to take place over short distances, and largely within country borders rather than internationally (Kaczan and Orgill-Meyer, 2020). Patterns of internal migration such as circular and seasonal migration (Bell et al., 2015), however, are often obscured by data provided by national census and registrar offices because of standardized measures worldwide. There is significant scope and need for research to understand these patterns of mobility.

For example, a synthesis of migration data from 21 study sites across climate change hotspots in India, Nepal, Pakistan and Bangladesh (Maharjan et al., 2020a) (n = 9440 households) found that, on average, 33 percent of households reported at least one migrant household member, and that migration was almost exclusively in-country (87 percent of migrant households) or within the Asian region (13 percent). This trend was consistent across contexts, with in-country migration accounting for 85 percent of migrant households in deltas, 80 percent of migration in the glacier- and snowmelt-dependent river basins, and 61 percent in semi-arid plains. For example, in the Ganges-Brahmaputra-Megha Delta in Bangladesh, 33 percent of households report a migrant family member, and 63 percent of these remain within the country's borders (Safra de Campos et al., 2020). Similarly, a survey of 825 households in three districts of Karnataka, India, found that between 32 percent and 47 percent of households reported at least one member of the household migrating in-country for work (Singh, 2019). These trends are not unique to South Asia. In the Volta Delta in Ghana, 49 percent of households report having one or more migrant worker in their household, and of these 94 percent report that these family members migrate within Ghana's borders (DECCMA, 2019).

Fig. 1 illustrates that the destinations of in-country migrants across three deltas in Bangladesh, India and Ghana are typically short range,

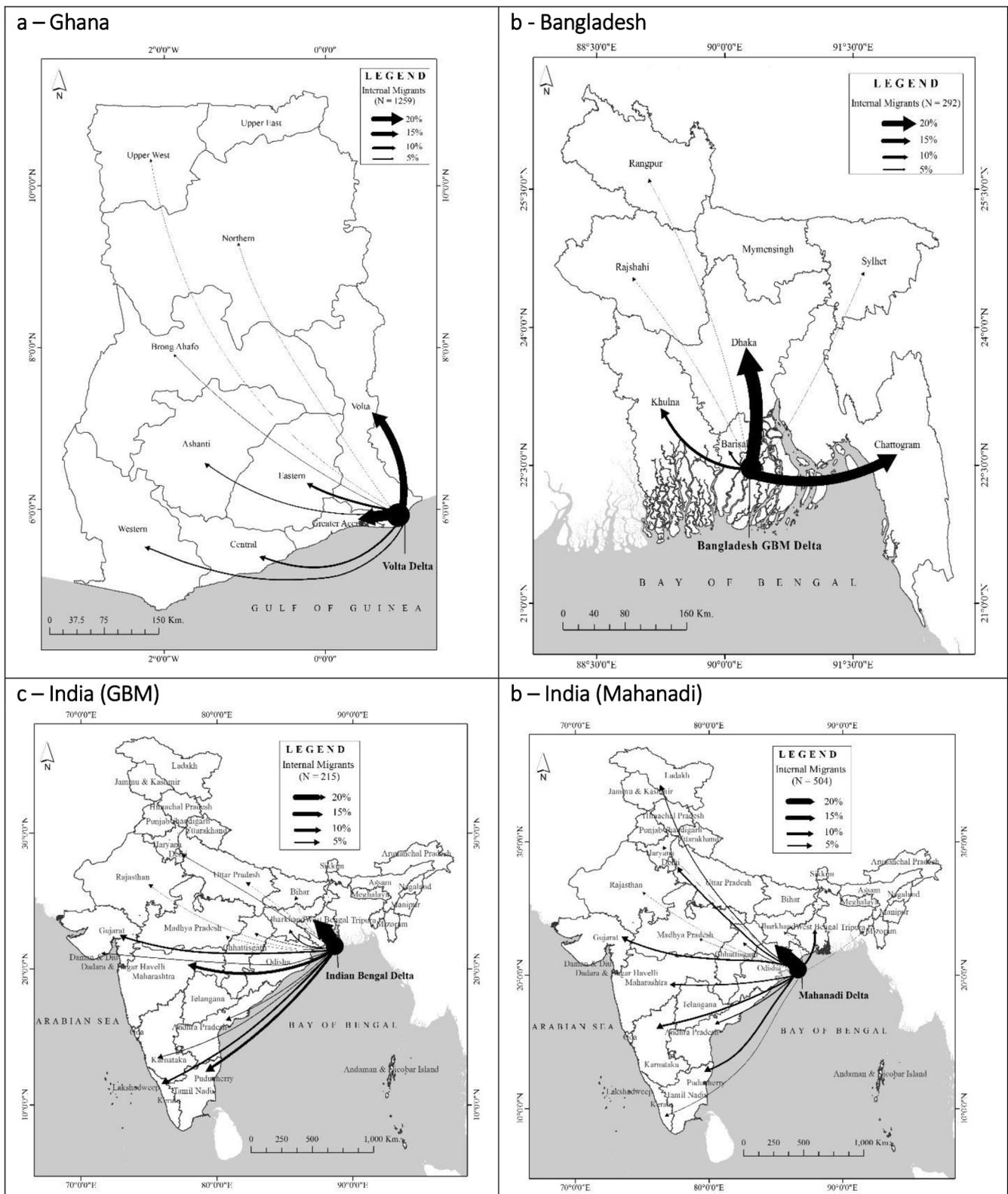


Fig. 1. Destination of in-country migrants from the Volta Delta in Ghana (a); the Bangladesh portion of the Ganges-Brahmaputra-Meghna (GBM) Delta (b); the Indian portion of the GBM (c); the Mahanadi Delta in India (d). Adapted from (Safra de Campos et al., 2020; DECCMA, 2019).

and between rural and urban areas (Safra de Campos et al., 2020; DECCMA, 2019). In Bangladesh, for example, net out-migration from the 19 districts that cover the Ganges-Brahmaputra-Megha delta is attributed to migration to the major urban centers of Dhaka and Chattogram, where economic opportunities draw migrants from rural areas

(Safra de Campos et al., 2020). This trend is seen more generally across South Asia, where prevalent types of mobility are daily commuting between rural and urban areas, seasonal and circular migration of under six months duration, and permanent migration (defined as a change in permanent residence for longer than six months) (Maharjan et al.,

2020a).

In some circumstances internal migration can promote security and upward social mobility by allowing families to move out of climate-sensitive livelihoods such as rainfed farming, improving incomes, providing opportunities for education, and reconfiguring intra-household gender hierarchies towards more agency for women (Singh and Basu, 2020). Work in the drylands of Ethiopia shows how households that have a member working either in-country or internationally were able to spread risk and cope better with drought (Camfield et al., 2020), and indeed research in semi-arid regions of both India and Kenya show similar trends, with mobility the norm rather than the exception and a key approach to manage risk in dynamic environments (Tebboth et al., 2018).

However, internal migration in many cases does not lead to upward social mobility or improved well-being outcomes for migrants (DECCMA, 2019). Indeed, although migrants in coastal regions across Bangladesh, India and Ghana identified migration as an adaptation response to climate pressures, none of the same migrants identified migration as among the top three most successful strategies in any of the deltas (Safra de Campos et al., 2020). Instead migrants often exchange one set of vulnerabilities for another, for example water scarcity in rural areas for flood risk in precarious slum settlements in cities (Jacobson

et al., 2019; Michael, Deshpande and Ziervogel, 2019).

To date, mobilities research has tended to focus on the contribution of migration to the households at the point of origin through an emphasis on remittances (Bettini and Gioli, 2016; Singh et al., 2019) or the welfare of migrants in their destination communities. Rarely are these two elements addressed together, despite being intricately linked. Approaches to mobilities research that focus on household-level strategies that include both those who leave and those who remain, and the connections between them, could make significant contributions toward demonstrating the overall role of shifting populations on the resilience of economies.

4. Mobility is not an option for everyone: The role of gender, education and other social factors that determine mobility and immobility

Immobility is as important to understand and respond to as mobility itself (Kothari, 2003; Ayeb-Karlsson, 2020). Wealthier and better connected households may be more likely to migrate than their poorer counterparts (Kaczan and Orgill-Meyer, 2020), and those most at risk from climate and other pressures may be unable or unwilling to move, also referred to as trapped populations. Since risks associated with

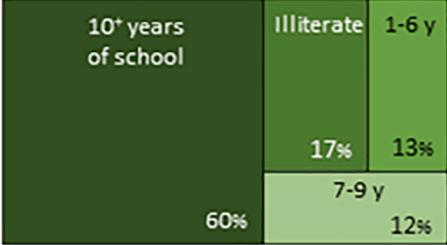
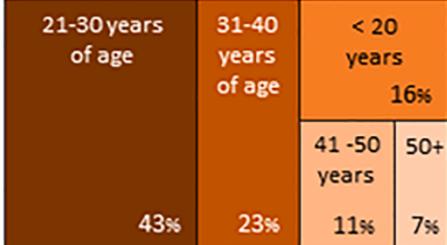
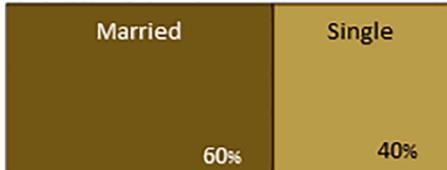
Features	Semi-arid plateau (n = 2725)	Semi-arid plains (n = 600)	Deltas (n = 4115)	Combined average (n = 7440)
Sex				
Male	73.6	91.7	83.9	
Female	26.4	8.3	16	
Formal education				
Illiterate	34.1	10.1	6.5	
1–6 years of school	17.2	10.7	10.8	
7–9 years of school	8.7	15.4	13.8	
10+ years of school	47.9	63.8	68.7	
Age group				
20 years and below	4	22.4	22.4	
21–30 years	43	46.4	39.4	
31–40 years	23.9	21.3	23.5	
41–50 years	16.4	6.4	10.8	
50+ years	12.4	3.6	3.6	
Marital status				
Single	26.7	48.6	43.5	
Married	73.3	50.8	55.1	
Separated	-	0.3	0.3	
Widowed	-	0.3	1	

Fig. 2. The multiple and intersecting determinants of mobility in semi-arid and deltaic climate change hotspots in South Asia (in percentages, adapted from (Maharjan et al., 2020a)).

immobility can be exacerbated by inappropriate policies that are designed to prevent people from moving (Black et al., 2011; Tebboth, Conway and Adger, 2019), a climate mobilities research agenda must explore the full continuum from mobility to immobility, including within the same households.

The ability to migrate is influenced by a wide range of intersecting social factors and life-course transitions, such as gender, age, caste, ethnicity, formal education, social networks and marital status (Bernard, Bell and Charles-Edwards, 2014; Singh, 2019; Maharjan et al., 2020a). At the same time, decisions to migrate are influenced by demographic, economic, environmental, political and social drivers, as well as by internal household characteristics, aspirations and social histories (Siddique et al., 2019; Rao et al., 2020). For example, gender plays an important role, in conjunction with other intersecting factors, in shaping decisions to migrate. Evidence from South Asia suggests that men are more likely than women to migrate, regardless of the environmental context (Fig. 2). The same studies suggest that people who are married, who have higher levels of education and who are between the ages of 20 and 40 are the most mobile, and again these trends are common across a wide variety of environmental contexts (Fig. 2).

There are a variety of reasons for these trends, including cultural norms that restrict female mobility and privilege male mobility, related care-giving responsibilities in the household, and household composition (Chindarkar, 2012; Rao et al., 2019a). Being married may facilitate the mobility of men, as wives can remain behind to maintain the household and fulfill caregiving responsibilities for the elderly and children (Singh and Basu, 2020). However, in some instances, women remain behind because they have more opportunities to work in home communities than men do. For example, in Ghana, research has shown that men migrate because they have less opportunities than women in their home communities, because women can sell firewood and shea butter, activities not regarded as men's work (Rao et al., 2019b).

When households that are left behind rely on adult women as the main source of labour, this can lead to greater responsibility for women in agricultural decision-making, and cooperation between men and women in land management. However, evidence on gender and women's agency across climate change hotspots shows that even in contexts where women have legal rights and decision making authority over land, state extension services and access to financial resources for agriculture remains male dominated (Rao et al., 2019a). When women migrate, agricultural land abandonment tends to follow, compared to when men migrate, which leads to the feminization of agriculture (Maharjan et al., 2020b). The outcomes of migration for families, and indeed the landscapes in which they live, are also therefore deeply gendered.

The very poor are also often less likely to migrate because of a lack of financial, human and social capital (Kothari, 2003; Black et al., 2011). In fact, those who have the means to pay for transportation and start-up costs of setting up a new home, or who have existing social networks in destination communities, are more likely to migrate (Siddique et al., 2019). Conversely, strong place attachment and social networks in home communities can influence decisions not to migrate even when conditions become untenable (Adger et al., 2013).

It is therefore imperative that climate mobilities research moves beyond simple narratives of migration as an undesirable social trend to be managed, or as a symptom of vulnerability for communities (Black et al., 2011; Upadhyay et al., 2015). Development policy aimed at supporting outcomes for migrants must focus on both destination communities and the families of migrants who are left behind, as well as supporting the interactions between them. Such policies must have a robust gender framing that anticipates risks and opportunities for both men and women, and the ways in which these intersect with other social features such as age, education, ethnicity, caste and class.

5. Toward a climate mobilities research agenda that supports the most vulnerable

The evidence presented here confirms and extends long standing arguments for a climate mobilities research agenda that pays attention to multiple drivers of mobility, that emphasizes multiple directions of movement, and that recognizes immobility as a key dimension of mobilities studies. Based on this evidence, we see limited value in a continued significant research focus on identifying a climate change signal in observed migration flows (Singh et al., 2019). We also find an urgent need to detach mobilities research from global political discourse that emphasizes international migration (Boas, 2019). Rather, we find ample evidence for concerted research effort on documenting and understanding short-distance and in-country migration, particularly in Africa and Asia.

The COVID-19 pandemic has led to major reductions in international migration flows, and significant return migration. Unsurprisingly, the impacts of the economic disruption caused by COVID-19 lockdowns have been deeply gendered, with women more likely to work in both frontline sectors and in those sectors most likely to experience shut-downs (Kabeer, Razavi and van der Meulen Rodgers, 2021). Early evidence suggests that the impacts of the pandemic on mobility patterns are likely to be long lasting (Rasul et al., 2021), as migrants elect to shift livelihood strategies *in situ*, or shift toward intermittent migration that is intended to generate enough financial security to stop migrating all together (Suhardiman et al., 2021). Since the intersectional impacts of the pandemic on mobility patterns are yet to be seen, it will be more important than ever for mobilities research to understand the underlying causes of vulnerability (Siddique et al., 2019). Mobilities research must explore the connections between mobility and the intersecting social factors that allow or prevent mobility for some, and that influence outcomes in source and host communities for all.

The COVID-19 pandemic has also made it impossible to ignore the urgent need for social protection for internal migrants (Srivastava, 2020; Raju, Dutta and Ayeb-Karlsson, 2021), such as unemployment and health insurance or asset transfers. The barriers are significant because migrants often work in informal sectors and in countries where social protection is already weak (Rasul et al., 2021). Nevertheless, going forward, understanding how social protection can support migrants as they adapt to climate change together with other shocks and stressors will be critical. In this context, social protection options that support long term adaptation, that build resilience to future shocks, and that tackle the structural causes of vulnerability and create conditions for transformative change will be an important research focus (Tenzing, 2020). The importance of linkages between source and destination areas for migrants suggest that concerted effort is needed in the years ahead to identify options of social protection policies that are able to support vulnerable and marginalized individuals on the move at the same time as those within their households who remain at home.

The examples from Asia and Africa highlighted here illustrate the need to integrate a nuanced understanding of the various forms of mobility into risk-oriented policy and adaptation option assessments at various scales, and the critical role of research in supporting this effort. For example, research can support policy aimed at promoting safer conditions for migrants on outward and homeward journeys and investing in equitable outcomes for migrant families in origin and host communities. To achieve this, the goal can no longer be about stemming migrant flows, and seeing migrants as a group to be managed, walled out, or kept in place. A strong voice in this arena is necessary as there is emerging evidence that restriction to movement during the COVID-19 pandemic is not solely being driven by public health interests (McAuliffe, 2020).

Going forward, cutting edge mobilities research will incorporate analysis of how migrants negotiate multiple risks and navigate difficult tradeoffs when moving or deciding that migration is not a preferred option. It will explore how policies can overcome rural–urban binaries

to realign with the reality of *trans*-local livelihoods and households, and it will explicitly explore pathways that reconfigure how host communities view and depend upon migrants. Critically, a mobilities research agenda will embrace mobility as a long-standing feature of everyday life, as a cornerstone of development policy, and as a key domain in which structural inequality can be tackled through a better understanding of intersectional vulnerabilities across the mobilities continuum.

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.

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