

Supporting the agency of cities as climate migration destinations

Sarah Katharina Rosengärtner¹  | Alexander M. De Sherbinin²  | Robert Stojanov³ 

¹Visiting Researcher, Zolberg Institute on Migration and Mobility, The New School, New York, New York, USA

²Center for International Earth Science Information Network (CIESIN), The Earth Institute, Columbia University, New York, USA

³Faculty of Business and Economics, Mendel University, Brno, Czech Republic

Correspondence

Sarah Katharina Rosengärtner, Visiting Researcher, Zolberg Institute on Migration and Mobility, The New School, 79 Fifth Avenue, 16th Floor, New York, New York 10003, USA.
Email: roses480@newschool.edu

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Abstract

As climate migration has garnered the interest of research and policy communities over the last two decades, the focus has been on whether, how and where climate stresses might precipitate out-migration, and how to assist and protect those affected. Less attention has gone to the places that receive climate migrants, and how their arrival might affect adaptation at destination. Against the backdrop of increasingly severe climate disruptions, this paper examines the likelihood of climate-related movements going into urban areas, and the challenges that this may entail for those who move and for urban governance. With much of climate migration projected to feed into existing urbanization trends, we see the need for data and research to help bolster the agency of communities and cities to plan and act locally, and across geographies, for inclusion and resilience, and to advocate collectively for enabling policy frameworks and increased national and international support.

INTRODUCTION

Climate change-related population movements (henceforth “climate migration”)—in various terminological guises¹—have become an element of a multidisciplinary academic and policy discourse, as well as garnering increasing media and public attention in recent years. The climate research and policy communities have had an interest in migration as a potential societal response to climate impacts since the first and second assessments of

the Intergovernmental Panel on Climate Change (IPCC) (Bruce et al., 1996; IPCC, 1992).² At the same time, the migration community began exploring the evidence on links between migration and environmental changes (IOM and RPG, 1992). A decade later, a series of policy reports and sponsored research on the implications of climate and other environmental changes on migration elevated the nexus to the attention of a broader audience.

This growing body of knowledge has underpinned the progressive recognition and inclusion of the links between climate change and migration in global climate and migration policy frameworks, as well as in those of adjacent fields such as disaster risk reduction (DRR) (see IOM, 2018b for a comprehensive overview). Yet, there is no political consensus on whether migration suggests a failure or success in climate change adaptation; whether it presents more risks or opportunities for the resilience of communities; and whether and how people displaced in the context of disasters and climate hazards should be protected, or communities and nations compensated for suffering the loss and damage of being displaced. In the absence of a common terminology, a unifying narrative and a clear institutional home, the governance of climate migration remains fragmented (IOM, 2018b; Refugees International, 2021).

This state of affairs reflects the fact that the level of urgency to confront current and prospective climate stressors and their impacts on migration is unevenly distributed across the globe and within societies. The most climate vulnerable regions, countries and people, that is those facing severe impacts combined with limited coping capacity, tend to have least contributed to the problem of global warming and would have the most to gain from a global responsibility sharing agreement. In the absence thereof, individual countries and some regions are formulating their own policy responses. However, it is local authorities, who are on the front lines of responding to climate hazards and vulnerabilities, and who are often ill-equipped to anticipate and plan for increasing climate impacts, including migration, without support from higher levels of government.

The IPCC's Fifth Assessment Report introduced a specific focus on urban areas, noting that cities across the world were at the centre of emerging global climate risks, including "rising sea levels and storm surges, heat stress, extreme precipitation, inland and coastal flooding, landslides, drought, increased aridity, water scarcity, and air pollution with widespread negative impacts on people (and their health, livelihoods, and assets) and on local and national economies and ecosystems" (Revi et al., 2014: 538). The assessment also noted the heightened vulnerability of urban communities living in informal settlements that have grown in the context of rapid urbanization and rapid growth of large cities in low- and middle-income countries (Satterthwaite et al., 2020). The newly released IPCC WGII Sixth Assessment Report, Chapter 6, confirms these earlier findings and states that both the risk and human and economic losses from climate hazards have increased in urban areas (Dodman et al., 2022).

Research and data generation efforts on climate migration have so far largely focused on better understanding if and how changes to the climate may affect various forms of migration. There is also a burgeoning literature on the use of different legal and policy frameworks to govern climate migration. More limited attention has been paid to where climate migrants are, and will be, going and how their movement can be accommodated in places that are likely to face their own set of climate adaptation challenges (Rosenzweig et al., 2018). This paper looks at climate migration through the lens of urban areas as likely destinations and explores some of the challenges that arise when climate migration adds to existing urbanization pressures. It also explores entry points for better supporting cities in their ability to plan for both demographic and climatic changes and to act as agents of change beyond their immediate jurisdictions.

We begin by discussing the state of knowledge on climate change as a driver of migration, including the relationship between climate stressors and migration (Section 2). Unless otherwise specified, we use the term "migration" as an umbrella term for various forms of human mobility, including internal and international movements, temporary mobility and permanent moves, as well as forced displacement and planned relocations (IOM, 2019). In Section 3, we discuss migration as a form of climate adaptation. In Section 4, we review the evidence for climate migration going to urban areas. Section 5 asks whether movement into urban areas can be considered adaptive and look at the challenges that arise in cities. In the concluding section (Section 6), we discuss enabling factors that could help cities become "climate destinations" and identify entry points for, and some promising indications of, progress.

The observations presented in this paper are based on desk research and the authors' previous work on modelling of climate mobility scenarios in various regional contexts, as well as advisory work for city networks, including the C40-Mayors Migration Council Global Mayors' Taskforce on Climate and Migration that involved consultations with city governments. In addition, we conducted a systematic review of the most recent literature on climate migration and cities for the period 2018–2021 via Google Scholar.

CONCEPTUALIZING CLIMATE MIGRATION

There is ongoing debate about whether climate migration represents a distinct form of migration, or is just another form of economic, distress or mixed migration (Avis, 2017; Van Hear et al., 2009). It is generally thought that, in contrast to labour migration, climate migration and displacement fall on the more “forced” end of the spectrum from voluntary to forced (Hugo, 1996). Yet, it is widely acknowledged that climate stressors operate through many of the traditional economic, social, demographic and other proximate determinants of migration, including education, social networks, the availability of intermediaries to facilitate migration, and a more or less favourable policy environment (de Sherbinin, 2020a; Foresight, 2011). This makes it difficult to identify people solely as “climate migrants” (de Sherbinin, 2020b). Most migrants themselves cite lack of jobs or poverty as primary motives for migration, but where climate factors affect jobs and livelihoods, it can be difficult to disentangle the causal links.

Climate migration is not a unified phenomenon—drivers, patterns and duration of movements vary. There are, in fact, many climate mobilities (Boas et al., 2019). Conceptually, exposure to hazard and social vulnerability determines climate risk (IPCC, 2012). The climate factors that are relevant to migration are also context specific. Inhabitants of drylands are adapted to rainfall variability, but multi-year droughts may strain coping capacity, whereas coastal dwellers are more likely to be affected by floods, effects of sea level rise and high winds from storms along with excess rainfall. Similarly, the same stressor (e.g. drought) will differentially impact groups that have different livelihood strategies (e.g. pastoralists, sedentary farmers, mixed animal husbandry and farming, traders).

The nature and intensity of climate impacts affect the type and likelihood of different types of mobility responses. For example, fast-onset events (floods and cyclones) often trigger reactive movements of a more temporary nature (people usually return when the event subsides), whereas more anticipatory and long-term patterns of mobility may be associated with slow-onset events (such as sea-level rise or long-term secular declines in rainfall or increases in temperature) that have durable impact, making return less likely if not impossible (Black et al., 2011a; Bohra-Mishra et al., 2014; Kälin, 2010; Nawrotzki et al., 2017).

Beyond a sedentary *status quo* (that would be preserved through adaptation *in situ*) and a climate-related mobility response, there is a grayzone of movements that are part of everyday life for certain populations, like pastoralists. Morphy (2007) discusses the challenges of capturing this reality in census data on Aboriginal groups in Australia. Other research (e.g. Arnall and Kothari (2015), Safra de Campos et al. (2017), and Kothari and Arnall (2019)) also points to the dearth of data on micro-mobility, understood as “everyday moves” associated with consumption- and production-related activities (Safra de Campos et al., 2017). As Schrepfer and Caterina (2014) discuss, mobile populations can still be displaced, such as when pastoralists are no longer able to practice nomadic pastoralism owing to drought, absence of pastorage, impoverishment or government policies that promote sedentarization.

It is generally accepted that most climate mobility will be internal and not international (e.g. Clement et al., 2021; Mueller et al., 2014; Rigaud et al., 2018; Rigaud et al., 2021a), yet the two can be interconnected. King and Skeldon (2010) discuss the many ways in which internal and international migration are often linked, both in countries of origin and destination. Paul (2011) examines international migration as a stepwise process, whereby migrants gradually accumulate more capital and expand their migration range—from the nearest city to a neighbouring country, to ultimately a higher income destination country. This is congruent with research findings,

suggesting that the poorest tend not to move, as the ability to migrate depends on factors such as having resources, knowledge, education and social networks (UNDP, 2009).

Indeed, immobility may result if people are too poor to migrate and climate impacts lead to a further erosion of already fragile livelihoods (Ayeb-Karlsson et al., 2018; Black et al. 2011a). The result is a deepening cycle of poverty, vulnerability and exposure to adverse impacts of climate change coupled with the inability to move. Research has confirmed that climate-related immobility is most pronounced in economically disadvantaged areas (Nawrotzki & DeWaard, 2018). However, it may also result from social obligations or a positive attachment to place (e.g. due to land ownership, reliance on ecosystem services) that translates into low mobility potential (Adams, 2016; Adams & Kay, 2019). Thus, it is important to distinguish between people who want to move but cannot and those who do not want to move (voluntary immobility) (De Haas, 2021; de Sherbinin, 2020a). Some people are strongly attached to their place of origin and simply do not want to leave their homes, even under precarious environmental conditions (Adams, 2016).

MIGRATION AS A FORM OF CLIMATE ADAPTATION

Given the risks associated with immobility in the face of intensifying climate hazards, migration is often framed as a form of household-led climate adaptation.³ Repeated destruction of homes may lead people to decide it is not worth rebuilding; crop or livestock losses may undermine the basis for livelihoods; and changes to the climate and ecosystems may mean that traditional knowledge becomes outdated, weakening or severing the ties between people and their land and environment. In response to such deteriorating conditions, one or more members of a household may decide to move to reduce the number of “mouths to feed” and generate additional income (e.g. Sydney, 2019). Yet, the question of whether migration is adaptive and for whom remains under debate and is likely to be context specific (Black et al., 2011b; Wright et al., 2020). As Gemenne and Blocher (2017:9) point out: “the development of policies which promote migration as adaptation warrants not just a reflection on the beneficiaries of these policies, but also on the indicators of success—and at which points in time they may best be measured”.

Migration was first recognized as an adaptation issue in the United Nations Framework Convention on Climate Change (UNFCCC)’s Cancun Adaptation Framework of 2010, which invited States to address migration, displacement and planned relocation through technical cooperation (Warner, 2012). The Sendai Framework for Disaster Risk Reduction (2015) conceptualizes population movements as both a source of risk and a contributor to strengthening the resilience of people and communities. It further recognizes that migrants, with their knowledge, skills and capacities, can contribute to the design and implementation of disaster risk reduction measures. Yet, despite the growing recognition in national policies that migration can serve adaptation (IOM, 2018a), movement has yet to be widely supported as an adaptive strategy, whether within or across borders. Few countries have migration policies that facilitate the movement of people for climate-related reasons (Cantor, 2021; Dempster & Ober, 2020; Francis, 2019; McAdam & Pryke, 2020), and national adaptation and disaster risk reduction policies often do not view migration positively or plan for it proactively (Sward & Codjoe, 2012; World Bank, Yonetani, 2018).

Investments in adaptation and resilience building⁴ are generally aimed at ensuring that individuals, communities and countries have the capacity to cope with and respond to climate-related hazards that can no longer be avoided by using in situ adaptation strategies (Brown, 2008; Richards & Bradshaw, 2017; Stapleton et al., 2017; Stojanov et al., 2021) that allow people to stay in place. Consequently, much research and policy attention has been focused on understanding which areas and regions of the world might be most stressed by climatic changes and extremes that may force people to move, using climate information related to past variability, current change and future projections. The literature points to low lying islands, coastal areas and drylands as so-called climate change “hot spots” (de Sherbinin, 2013) that will be particularly hard hit. There is also some evidence to suggest that areas such as forests and cities could become sending areas (IDMC, 2021; Nawrotzki et al., 2014; Van der Vuurst & Escobar, 2020).

Less attention has been paid to destination areas and how those might prepare for climate migration. This gap is becoming more critical as, in some situations, adaptation *in situ* may no longer be possible, whether because of the acute or cumulative impacts of a disaster, the progressive degradation of living conditions due to adverse effects of climate change (Horton et al., 2021) or increasingly unmanageable costs. Governments, businesses, communities and individuals will need to grapple with the question of the “limits to adaptation” (Dow et al., 2013; Oliver-Smith & de Sherbinin, 2014). As the inevitability of severe climate impacts and their implications for people moving are becoming more apparent, attention is beginning to shift to probable destinations (e.g. Robinson et al., 2020). At the same time, destination areas will, for their part, have to address the impacts of movements on their adaptation choices and prospects.

Economically motivated migration (which, as discussed earlier, can hardly be fully disentangled from other motives for moving, including climate factors) often focuses on urban centres because they concentrate opportunity for work, a more stable income, commerce, access to services and more personal liberties. It is estimated that 60 per cent of refugees (Huang & Graham, 2018) and 80 per cent of internally displaced persons (IDPs) have settled in cities around the world,⁵ although some suggest the latter share is closer to 50 per cent, if looking at IDPs in low- and middle-income countries only (Huang & Graham, 2019). If climate migration follows and reinforces these existing movement patterns, cities are likely to see the brunt of new arrivals and to be critical theatres for, and actors in, shaping the outcomes of climate mobility as an adaptive strategy. The question of how climate migration may impact the adaptive capacity of cities themselves is still largely unanswered (Barnett & Adger, 2018). In the following section, we undertake a cursory review of the evidence linking climate factors to migration into urban areas and to the larger urbanization trends that are underway in Africa and Asia (UNDESA, 2019).

ARE CLIMATE MIGRANTS MOVING TO URBAN AREAS?

Climate risks and related displacement are high in regions that are also seeing rapid urbanization. Among world regions, Africa is seeing the highest rate of urban population growth, largely due to its overall population growth, including in cities, while Asia has the highest rate of urbanization driven by the highest net rate of rural–urban migration (Tacoli et al., 2015).⁶ Climate migration in these regions is likely to “blend into” existing urbanization and urban growth trends, rather than driving them. The question is whether cities might see a different type of movement or movers owing to climate stresses, and how the conditions for the reception and inclusion of newcomers might change given cities’ exposure to climate impacts and the climate adaptation actions they might take. More frequent or intensifying disasters could undermine cities’ ability and willingness to welcome and accommodate newcomers. At the same time, it is possible that resilience investments in cities might create more favourable conditions for the reception of migrants, for instance by improving infrastructure or harnessing their skills and manpower for the “greening” of urban economies.

Research on climate migration tends to be preoccupied with establishing the relative importance of climate versus other factors in influencing migration decisions (Cundill et al., 2021) and focus less on the direction of movements or evidence for climate impacts driving migration from rural to urban areas. That said, the evidence that does exist generally points to climate factors increasing urbanization rates, though the circumstances under which climate variability and extremes increase rural-to-urban migration vary. In some cases, climate anomalies may result in decreases in rural–urban movements. In one of the few global studies, for example, Cattaneo and Peri (2016) use panel data for 115 countries from 1960 to 2000 and find that higher temperatures in middle-income economies increased migration rates to urban areas and to other countries, whereas in poor countries, higher temperatures reduced the probability of migration to cities and to other countries. This is consistent with evidence from elsewhere that migration rates may in fact be depressed among the very poor owing to liquidity constraints resulting from climate impacts on livelihoods—a form of involuntary immobility (de Sherbinin, 2020a).

In the following, we summarize the evidence for climate-related urbanization across different developing country regions. It should be noted up front that varied findings may partly be attributable to significant differences in data (both climatic and demographic) and methods across studies.

In Asia and Oceania, available studies suggest a predominance of climate migration into urban areas. Vinke (2018) explored "migration as adaptation" in the context of Bangladesh and the Marshall Islands and found that in Bangladesh climate disasters were driving displacement to urban areas, whereas in the Marshall Islands many were leaving for the United States owing to the growing impacts arising from sea level rise. Also in Bangladesh, GIZ (2020) found that in five cities—Barishal, Khulna, Rajshahi, Satkhira and Sirajganj—57 per cent of the urban poor population were, by the authors' definition, climate migrants. Ahsan (2019) finds a similar pattern of climate-induced rural-to-urban migration in the country. Mianabadi et al. (2021) found that the main reason for migration from rural areas in Sistan to Mashhad city in Iran is environmental degradation, including drought and water scarcity. Dun (2011) found that worsening floods in the Mekong Delta contributed to increase rural displacement and seasonal mobility to urban centres, such as Phnom Penh, and larger urban centres in South Viet Nam, notably Can Tho City and Ho Chi Minh City, where there were more opportunities to seek new jobs and protection. In Oceania, according to Locke (2009), migration is fuelling urban growth in the capitals of Kiribati and Tuvalu, partly owing to economic factors and partly driven by coastal erosion and gradual salinization of drinking water sources and agricultural soil. The Maldives has, unlike most other low-lying island countries, been actively relocating populations from remote islands to safer or new artificial islands owing in part to the threats arising from sea level rise (Stojanov et al., 2017).

Several studies focusing on Africa also suggest a link between climate migration and urbanization. Henderson et al. (2017) examined climate-driven urbanization in Africa and found that climate shocks drive urbanization in cities with manufacturing for export, where economic dynamism is not solely tied to the agricultural sector. By contrast, market towns that service agriculture were not found to grow, reflecting their reliance on farm production and reduced demand for services from surrounding agricultural areas. Mueller et al. (2020) assessed the impact of climate variability on temporary migration patterns in East Africa, finding that urban temporary out-migration declines during periods of high temperatures and/or low rainfall, but that rural temporary migration rates remain stable. They hypothesize that climate shocks also affect the urban economy, citing evidence of low labour force participation rates during climate extremes, meaning the availability of urban employment opportunities is limited for would-be migrants. Using panel data, Marchiori et al. (2012) estimated that temperature and rainfall anomalies caused a total displacement of 5 million people to urban areas of sub-Saharan Africa during the period from 1960 to 2000. Similarly, Barrios et al. (2006) seek to identify push factors for urbanization in Africa that is occurring despite the lack of economic dynamism in many of the regions' cities. Examining urbanization rates from the UN in conjunction with country-level rainfall averages and other known determinants of urbanization for the period 1960–1990 for 78 countries, they find that declines in precipitation affecting rainfed crops do have a statistically significant impact on African urbanization rates, whereas similar variations in rainfall in non-African developing countries had no such effect.

For Central America, the evidence suggests an interplay between internal climate migration to cities and international migration towards the United States. Nawrotzki et al. (2017) explored the likelihood of migration in Mexico by duration of drought and extreme heat events with a focus on four types of flows: rural–rural, rural–urban, urban–rural and urban–urban. They found that the longer the duration of a drought, the higher the probabilities of rural–urban migration, and the lower the probabilities of urban–urban migration. Also in Mexico, Jessoe et al. (2018) found the impacts of temperature and precipitation anomalies varied depending on the timing within the growing season, with increases in harmful degree days early in the season resulting in more US-bound migration compared to later in the season, which increased internal migration. Positive effects, such as extended growing seasons, also resulted in more rural-to-urban migration as incomes increased. Results for precipitation were inconclusive. Lustgarten and Kohut (2020) describe the migration strategy in Guatemala, where farmers from rural drought-affected areas first move to big cities, which may then become staging areas for migration to

the United States. In modelling work for the Mayor's Migration Council, de Sherbinin et al. (2021) find that climate factors may indeed induce higher rates of urbanization in the future for Mexico and Central America, but that factors such as U.S. border policy are likely to have an even greater impact on urbanization rates, with closed borders leading to much more rapid expansion of urban areas.

In the United States, well-documented cases of urban reception are linked to Hurricanes Katrina in 2005 and Maria in 2017 (e.g. Groen and Polivka 2008; Milman 2018). Houston became a temporary home to more than 250,000 people displaced from New Orleans, of which an estimated 40,000 to 100,000 stayed permanently (BBC, 2017; Roderick et al., 2021; Sastry & Gregory, 2014). There is growing interest among groups such as the American Society for Adaptation Professionals (ASAP) in supporting destination areas for those moving due to sea level rise or growing forest fire risk, including medium-sized towns and cities.⁷ According to Hauer et al. (2020), when people in the United States are displaced in response to sea level rise hazards, they tend to migrate to nearby urban job-growth centres, rather than making small, incremental migrations.

Scholars still disagree whether climate factors will be decisive in changing the type or volume of movement into urban areas (e.g. Barnett & Adger, 2018; Barrios et al., 2006). What can be observed is that when rural households use migration to cope with climate variability and shocks, the movement tends to be temporary or only undertaken by some household members. Cities become a node in a trans-local mobility system, rather than a place of permanent settlement and attachment, which has implications for urban governance (Blaser Mapitsa, 2020; Landau, 2010). Indeed, recent research further underscores the reality that many rural dwellers do not want to leave their homes owing to strong attachment to place and dependence on traditional social networks (Adams & Kay, 2019, Mixed Migration Centre *forthcoming*). However, as climate impacts become progressively worse in many regions, this could mean greater numbers of distress migrants (Henderson et al., 2017) who will need humanitarian assistance. All indications are that a primary destination for those in distress will be towns and cities, just as was the case during the great Sahelian droughts of the early 1970s and 1980s (Rigaud et al., 2021a).

IS MIGRATION INTO URBAN AREAS ADAPTIVE?

Rural–urban migration may offer the best chance to economically lift people out of poverty who are forced off the land. However, as the flagship Foresight report (2011) pointed out, many climate migrants move into vulnerable coastal cities, where despite escaping one set of climate threats, they may end up experiencing others just as severe or even worse (de Sherbinin et al., 2012; Geddes et al., 2012; Gemenne et al., 2020). In the US context, current movement patterns seem destined to exacerbate future climate migration pressures as people head for cities that are at risk of experiencing extreme heat and wildfires (Marandi & Main, 2021). In some cases, movements into risky areas are directly supported or even incentivized by government policy. Marandi and Main (2021:2) observed that “[d]espite the increase in publicly available flood risk data, eastern coastal states such as Connecticut, Delaware, New Jersey, Rhode Island, New Jersey, Florida, and North Carolina are all developing new housing in vulnerable zones two to three times faster than in safer locations”.

Indeed, a subtheme in the literature is the ways in which climate migration may result in increased exposure to climate and other risks in urban destination areas. This is especially true for migrants who move into informal settlements that are poorly built and serviced, and often located in hazard-prone areas (Hauer et al., 2020). Bangladesh is a case in point. Mukaddim and Hossain (2021) find that, in Khulna City, coastal migrants and displaced persons predominantly relocate to informal and squatter settlements. Ayeb-Karlsson et al. (2020) evaluates the emotional and psychological impact of moving from an eroding island in coastal Bangladesh to Dhaka, where many villagers land in flood-prone slums, having just escaped coastal threats. She finds that they are more “trapped” in the city than they were before leaving the island because of depleted assets (Ayeb-Karlsson et al., 2020; Ayeb-Karlsson 2020). Other studies confirm the potential impacts of climate threats on the urban poor and populations in informal settlements, many of whom are recently arrived migrants from rural areas. This includes exposure to sea level

rise in Cotonou, Benin (Dossou & Glehouenou-Dossou, 2007) and Lagos, Nigeria (Mixed Migration Centre *forthcoming*), and landslides in the favelas (informal settlements) of Rio de Janeiro, Brazil (de Sherbinin & Hogan, 2011). A fuller account of this research can be found in Reckien et al. (2018).

Beyond climate risks, other factors may hamper the adaptive potential of movement into urban areas, including high levels of unemployment, poor working conditions and the high cost of housing. People who crossed international borders may find themselves without authorization to work, which is the situation of many urban refugees today (Huang & Graham, 2018; UNHCR, 2018).

There is some evidence that people moving away from hazards and into cities can generate vulnerabilities for those who are already there, for instance by contributing to environmental degradation, such as deforestation, and by driving up prices in receiving communities that make them less affordable for long-time residents, a phenomenon dubbed “climate gentrification” in the US context (Poon, 2020). Marandi and Main (2021) highlighted the risk of climate migration having a disproportionate impact on already disadvantaged and marginalized communities in receiving cities. Tacoli et al. (2015) observed that urban policies in fast-urbanizing contexts are often geared to discourage rural–urban migration, which is perceived as a contributor to urban poverty. Yet, instead of curbing migration, the resultant underinvestment in urban planning and service delivery exacerbates the problem of difficult living conditions for the urban poor in informal settlements. They assert that “the growth in informal settlements is not so much related to the rate of a city’s population growth (and the contribution of net in-migration to this) as to the competence, capacity and accountability of its government” (Tacoli et al., 2015:17f).

Indeed, even without climate change as an aggravating factor, observers see the inability of urban governance systems to cope with rapid urbanization as an important source of disaster and other risks (e.g. related to poor health, crime, violence and labour exploitation), especially for poor urban residents (Sandoval, 2019; Shi et al., 2021; Tacoli et al., 2015). Beyond hostile local and national policies, fiscal arrangements, including insufficient fiscal transfers, can make it difficult for local authorities to meet their obligations vis-a-vis informal settlement dwellers (Cartwright et al., 2018). Where municipal revenue is tied to user fees that many in informal areas can hardly afford, developing and upgrading poor informal areas to accommodate rural-to-urban migration becomes a financial burden for municipalities and for poor urban residents who are asked to pay for upgrades (Fjeldstad et al., 2015). There is also insufficient international support for urban climate adaptation investments. The Cities Climate Finance Leadership Alliance (CCFLA) finds vastly insufficient levels of urban climate finance, especially for developing countries in South Asia and Africa that received an annual average investment of just USD 4 billion and USD 3 billion, respectively, in 2017 and 2018. The CCFLA also diagnosed a large gap between investments in urban climate change mitigation (91 per cent of climate finance flows tracked) and adaptation and resilience building (9 per cent) (Negreiros et al., 2021).

In combination, this state-of-play suggests that expecting cities to prepare for an influx and the inclusion of newcomers in the context of increasing climate hazards—among other by improving infrastructure, quality and accessibility of housing and transport, education, social services, including health care and employment opportunities (Devermont & Moss, 2019)—will be very high “bar” for many, especially in low- and middle-income countries. In the US context, Marandi and Main (2021) distinguish two categories of destination cities: so-called “recipient cities” unwittingly receive people without preparation, usually following a disaster. “Climate destinations” on the other hand are cities that see climate migration as an opportunity for revitalization and that are in a relatively good position to welcome newcomers due to their affordability and proactive planning for climate adaptation and resilience.

It seems safe to say that most cities in the United States and around the world are likely to fall into the former category; that is, they are largely unprepared for a potential influx of people, whether from a disaster-affected area nearby or abroad. At the same time, cities have managed sudden and large migrations in recent years, including the welcome and inclusion of millions of Syrians and Venezuelans, and now Ukrainians, fleeing their countries. Development banks have assumed a larger role in helping to address the impacts of displacement on host communities, for instance through infrastructure updates, such as improved waste management systems (e.g. EBRD in

Amman⁸) and the use of renewable energy solutions (Rigaud et al., 2021b). However, to move from recipient city to climate destination, cities will not just require enhanced technical and financial support and capacity development. Political leadership and community buy-in and mobilization are key. Promising approaches are emerging in African cities such as Accra and Freetown that are using inclusive climate actions such as waste management and tree planting and care to reduce risk for urban dwellers while also creating job opportunities for young people.

STRENGTHENING THE AGENCY OF CITIES TO GOVERN CLIMATE MIGRATION

In rapidly growing cities, climate migration may only represent a small share of the overall population increase. For local policymakers, the reasons why people migrate to urban areas may be secondary, as they face the more urgent question of how to address the fact that they are moving and facilitate their inclusion in the urban fabric. National and local politics and policies are not always be supportive, especially if welcoming newcomers is seen as coming at the expense of locals. The experience of the coronavirus pandemic has underlined that the inclusion of informal and undocumented populations in safety nets serves to bolster the collective resilience of all urban residents (MMC, 2020). Yet, political leadership, financial means and community organization are needed to make and prove that case.

Van der Heijden (2019) suggests a set of factors that enable cities, including city governments and others, to effectively govern local climate action.⁹ We find these to be sufficiently broad and comprehensive to describe conditions for effective local governance more generally, including when it comes to climate migration: (1) a supportive political and legal context; (2) autonomy for taking urban climate action and governing local affairs; (3) access to funding for climate action; (4) being embedded in multi-level networks that ensure vertical coordination between a city government, the regional government and the national government; (5) horizontal coordination across different departments, agencies and organizations within a city; (6) being part of capacity-building and learning networks; (7) collaboration between governmental and non-governmental actors, and the participation of a wide range of stakeholders; and (8) presence of a local climate champion.

Based on our research and reading of the literature, as well as experience working with cities and their networks and international organizations, we suggest three entry points for making progress on putting in place these enabling conditions, helping cities to assess and address the movement of people in the context of worsening climate impacts and use local climate actions to facilitate their inclusion.

Data and research for urban communities and collaboration

Data and research can provide an important entry point for 4, 5, 7, furthering vertical, horizontal and government-stakeholder collaboration as they can create a common language and a shared understanding of the problems and potential futures facing a given community. Cities generally lack data on how climate stresses might affect their demographic composition, including population size and the profile and distribution of residents, which could help local and national authorities better plan for urban resilience. Marandi and Main (2021) suggested the use of demographic modelling of potential climate migration scenarios, though an imperfect science, to help communities understand how they might be affected by climate impacts and subsequent migrations.

Many cities also lack information on climate vulnerable populations, especially “invisible residents” like informal dwellers and temporary or undocumented migrants that are often not captured in government statistics (Satterthwaite et al., 2020). At a whole-of-city scale, Foster et al. (2019) proposed a multi-dimensional methodology for incorporating equity concerns into climate change vulnerability assessments and community adaptation planning for New York City. In terms of capturing the resources and needs of particular communities, Slum

Dwellers International's "Know Your City" campaign is collecting data on populations in informal settlements and leveraging that information to engage with local governments and advance demands for the upgrading and formalization of settlements (Kallergis, 2018). Profiling exercises, such as those undertaken by the Joint IDP Profiling Service (JIPS), can help to better understand the outcomes of movements for migrants and host communities. They can also start a process of engagement between communities and authorities. In this vein, Anzellini and Leduc (2020:7) call for "capacity development of local authorities and the participation of urban IDPs and host communities in data collection around their vulnerabilities and needs" as an important step to sustain data collection and analysis over time.

Gemenne et al. (2020) noted the need for further research on how the arrival of migrants impacts the climate action priorities of cities in sectors such as transport, housing and food security; how the specific vulnerabilities of forced migrants should be considered in cities' climate actions; and how shared vulnerabilities across different groups of city residents may lend themselves for building alliances between migrants and other residents to advocate around shared concerns. Shi et al. (2016) stress the need for research centring on the sources of social vulnerability in cities and increased focus on climate justice, including broadened participation of marginalized groups in cities' climate adaptation planning and the adaptation needs of rapidly growing cities that have limited capacities. Anguelovski et al. (2016) pointed to land use planning practices as an important entry point for interrogating cities' commitment to equity in their climate adaptation efforts.

Collective mobilization of mayors and cities

Many cities on the frontlines of climate displacement will not be able to manage without more competences in areas such as land use and zoning and the ability for own-resource generation, as well as increased fiscal transfers and investment in urban systems (C40 Cities and MMC, 2021; Rosenzweig et al., 2018). To advance (1) a supportive legal and political context and gain (2) needed authority over matters that directly affect their jurisdictions, including (3) increased resources, cities are organizing themselves in national and international networks that allow them to press for a seat at decision-making tables on climate, migration and other policy areas. Mayors have declared their political commitment to lead on climate action and the achievement of the Paris agreement,¹⁰ as well as the implementation of the Global Compacts on Refugees and for Migration (Marrakesh Mayors Declaration 2018).

More recently, city leaders have come together to address the topic of climate migration through networks like the Mayors Migration Council (MMC) and the C40 Climate Leadership Group,¹¹ as well as the Global Parliament of Mayors that has sought to galvanize local leaders around the challenges facing low-lying communities.¹² US cities sent an open letter to the Biden administration to claim a part in shaping the US Government's response to climate migration (The White House, 2021), including as regards immigration, foreign assistance and climate policies.¹³ Indeed, citing their critical role in ensuring migrants' inclusion, cities are increasingly pressing for closer involvement in the traditionally sovereign domain of immigration policy. In Canada, subnational authorities have sought and gained authority to nominate immigrants to move to their territory (Sumption, 2014). Local communities are also claiming a role in refugee resettlement, with the Canadian model of private or community sponsorship being adopted in several other countries.¹⁴ And, a growing Welcoming movement¹⁵ in OECD countries provides standards and peer-support for localities and a constituency for meeting prospective climate migrations with welcoming and inclusive local and national policies.

A critical function of mayors' and city networks is that they facilitate 6) peer-learning and peer-support for 8) local champions, especially where the latter operate in difficult or hostile political environments. A challenge is that existing research (Van der Heijden, 2019) and city networks remain focused on the global North. Cities in the most climate vulnerable regions need their own fora to come together and press for enabling conditions within the power structures of their particular contexts.

Adaptation planning across territorial and sectoral boundaries

The adaptive capacities of one locality are shaped by its connections with other places (Moser, 2020; Shi et al., 2016; Shi et al., 2021)—including other levels of government, transnational supply chains and diaspora networks. As Satterthwaite et al. (2020:144) note, supporting resilience among vulnerable groups in cities requires measures at and across different scales including “individuals or households (and their homes, assets and livelihoods), neighbourhoods, settlements, settlement-city links and settlement-city-regional links”. This is important not just because decisions at larger scales affect what happens more locally, but also—as Blaser Mapitsa (2020) discusses for South Africa—because people's lives and livelihood strategies often straddle different scales as they use multi-locality, that is household presence in both rural and semi-urban areas, to mitigate risks and tap into the respective opportunities of each location, such as access to education and jobs in urban settings vs. child care and food growing in rural ones. However, changing seasons and weather patterns can disrupt households' ability to plan ahead, making these multi-local livelihood strategies more precarious and calling for governmental planning approaches that address climate risks not in isolation, but across the rural-urban continuum (Blaser Mapitsa, 2020).

Fora that integrate factors 4, 5 and 6 above, by connecting national and regional planning bodies with functionally integrated urban areas and rural areas might open new avenues for jointly addressing climate migration. For instance, in Bangladesh, to help take pressure off the capital Dhaka, efforts are underway to support “migrant-friendly” climate adaptation in smaller towns and cities by improving planning and basic services and supporting newcomers with skills development (Khan et al., 2021).

In principle, investment in cities vs rural areas does not have to be a zero-sum proposition, though in practice urban infrastructure development often results in risk transfer (Dodman et al., 2022). Shi et al. (2021) described how water infrastructure projects in four Asian mega-cities create shared vulnerabilities among poor rural and urban dwellers and ask whether rural-urban solidarity and alliance-building between both groups might be possible across geographic and identity divides. As hosts to large (im)migrant populations, cities are part of transnational and trans-local people-to-people solidarity networks that could be leveraged and supported to advance adaptation actions and resilience-building.

There is scope for further exploring and developing policies and programming around the role of migration-related ties in building local resilience (Farbotko, 2020; Greiner et al., 2015; Sakdapolrak et al., 2016; TransRe, 2018), and for enhancing the use of individual and communal remittances and other transfers (knowledge and technology) for resilience-building (Plaza, 2019). There are also experiences with city-to-city circular migration Schemes (C40 Cities and MMC, 2021:37) that could serve as inspiration for cities playing a role in the development of international migration for adaptation policies.

Cities provide an entry point not just for working across geographical scales or jurisdictional boundaries, but also for integrating actions across policy sectors, as some local governments have done with ambitious blueprints for localizing the Sustainable Development Goals (SDGs).¹⁶ A review of good humanitarian practice in urban settings highlighted the need for a holistic, people- and system-centred response that transcends the usual cluster approach and its sector-based delivery (Sanderson, 2020). In discussing national policies, Blake et al. (2021) observe:

“[I]n order to help the growing number of people affected by climate change who move, want to move but cannot, and should move but will not, the policy conversation should be much wider (e.g. social issues). [...] That is because the sources of both climatic hazards and vulnerability to those hazards runs far deeper than the immediate sources of climate mobility. Policies of all sorts—from taxation and trade to urban planning and family planning—increase or decrease people's vulnerability to climate change and help determine whether mobility will be adaptive or maladaptive. The issues at the intersection of climate change and mobility are vast”. (p.26)

The IPCC WGII Sixth Assessment calls urbanization a time-limited opportunity for transformational adaption and climate resilient development, if actions for adaptation, mitigation and development can be aligned (Dodman et al., 2022). Yet, as things stand, adaptation efforts barely seem up to the task of dealing with increasingly severe climate disruptions. People moving could be one of those disruptions, or it could be a relatively normalized process. Much depends on how well governments manage to articulate their approaches across sectors, geographies and international borders. Local leadership is a necessary (if on its own insufficient) ingredient in this process that can function as an engine for cross-sector and cross-jurisdictional collaboration. We propose a focus on cities as they tend to be the primary migration destinations and to have the most capacity and political clout among local authorities. They will also be responsible for securing the well-being and resilience of an increasingly large share of the global population, including some of the most vulnerable groups. Investments and actions in urban destination areas can shape whether migration is supportive of, or an obstacle to, climate adaptation, if understood as part of a trans-local and potentially transnational process of resilience-building for communities of settlement and origin alike.

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DATA AVAILABILITY STATEMENT

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ORCID

Sarah Katharina Rosengärtner  <https://orcid.org/0000-0002-7623-6808>

Alexander M. De Sherbinin  <https://orcid.org/0000-0002-8875-4864>

Robert Stojanov  <https://orcid.org/0000-0002-0471-7055>

ENDNOTES

¹ There is no consensus on terminology in the field, with terms such as climate-induced migration, climate or disaster displacement, climate refugees, environmental migrants and climate mobility all being used. For the purposes of this paper, we use "climate migration" as a shorthand to describe the range of human movements of different durations, distances and levels of voluntariness that occurs in the context of climate-related hazards.

² There are several references to migration and resettlement in the first assessment report (IPCC 1990). According to the second assessment, impacts such as rising sea levels, increased storm surges and risk of midcontinental drought and desertification "could promote human migration and major conflicts as well as famine, disease, and increased mortality" (Bruce et al., 1996:22). References to migration by the UN Framework Convention on Climate Change came much later, in 2010 (Warner, 2012), owing in part to the convention's early emphasis on mitigation and its delayed attention to adaptation.

³ The IPCC defines adaptation as "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities" (Field et al., 2014: 40). Different countries and even localities define adaptation (and what successful adaptation is) differently (Dupuis & Biesbroek, 2013), depending on the context, and the underlying philosophies or development paradigms guiding their approach (Chapman et al., 2016). Barrett et al. (2020) noted that "adaptation" is increasingly being defined as "climate-resilient pathways" that achieve "climate-resilient development." However, this formulation merely replaces one context-specific term (adaptation) with another one of similar or even greater ambiguity (resilience).

⁴ Resilience can be defined as "the ability of a system and its component parts to anticipate, absorb, accommodate or recover from the effects of a hazardous event in a timely manner, while ensuring the preservation, restoration or improvement of its essential basic structures and functions" (IPCC, 2012: 563).

⁵ <https://www.unhcr.org/innovation/the-power-of-cities/>

⁶ As Tacoli et al. (2015) point out, it is important to distinguish between the two, as urbanization refers to the proportion of the total national population living in areas classed as urban (vs. those in rural areas), whereas urban growth captures the absolute number of people living in areas classed as urban. Rural–urban migration is a significant factor in urbanization, but usually has a much lesser role in urban growth.

⁷ ASAP organized a December 2021 virtual workshop on Climate Migration: Preparing Receiving Communities.

⁸ <https://www.ebrd.com/news/2016/ebrd-helps-jordan-upgrade-its-municipal-services.html>

⁹ Based on a systematic review of the urban climate governance scholarship of the last ten years, including 115 peer-reviewed journal articles and 145 books and book chapters published in English between 2009 and 2018.

¹⁰ <https://www.c40.org/other/city-commitments>

¹¹ <https://www.mayorsmigrationcouncil.org/climate>

¹² <https://globalparliamentofmayors.org/unitingmayors/>

¹³ <https://www.mayorsmigrationcouncil.org/news/mayors-ask-biden-to-be-included-in-climate-migration-study>

¹⁴ <https://refugeesponsorship.org/>

¹⁵ <https://welcominginternational.org/>

¹⁶ <https://www.local2030.org/vlrs>

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