

GROUNDSWELL

Acting on Internal Climate Migration

POLICY NOTE #6

Internal Climate Migration in Eastern Europe and Central Asia

Climate change is emerging as a potent driver of mobility. The report *Groundswell Part II: Acting on Internal Climate Migration (2021)* projects that, by 2050, without concrete climate and development action, just over 216 million people—or around three percent of the population in Sub-Saharan Africa, East Asia and the Pacific, South Asia, North Africa, Latin America, and Eastern Europe and Central Asia— could be forced to move within their own countries to escape the slow-onset impacts of climate change. In Eastern Europe and Central Asia, “internal climate migrants” could number as many as 5.1 million, representing up to 2.3 percent of the region’s total population.

Climate migrants will move from less viable areas with lower water availability and crop productivity. The poorest and most climate vulnerable areas will be hardest hit. These trends, alongside the emergence of “hotspots” of climate in- and out-migration, will have major implications for climate-sensitive sectors and for the adequacy of urban infrastructure and social support systems in both rural and urban areas. While some climate migration cannot be avoided due to the lock-in of climate effects of past emissions, the report results also indicate that future trajectories of climate migration are not set in stone.

Climate migration in Eastern Europe and Central Asia can have substantial development implications, and the stakes are high. Achieving a resilient society—where people can either adapt in place and thrive or migrate with dignity toward areas of higher opportunity—is an important part of meeting national development goals.

Policy decisions made today will shape the extent to which the effects of climate change will be positive for migrants and their families. Inaction would mean missing a window of opportunity to reconfigure where, when, and how climate resilient investments are made in support of robust economies.

This Policy Note #6 is the sixth in a series of six notes drawn from the Groundswell reports. It provides an overview of results and their implications for Eastern Europe and Central Asia, one of the six regions of focus.

CLIMATE CHANGE AND MIGRATION: SETTING THE CONTEXT

Climate change will intensify environmental degradation and natural hazards in many regions. Related impacts are already directly and indirectly shifting human mobility—both within countries and across borders—and will do so increasingly. Sometimes, ensuing migration can be an adaptation to climate change. At other times, climate change impacts increase the probability of migration under distress, creating growing challenges for human development. In some areas, the most vulnerable will be unable to move, “trapped” in at risk locations.

Recent compounding shocks are also increasing the complexity and interconnectedness of underlying drivers of mobility. The COVID-19 pandemic and its associated economic crisis, and the effects of fragility and conflict, have compounded the shocks already faced by vulnerable people, reversing hard-won gains in poverty reduction and shared prosperity, and adding to policy challenges.

The objective of the *Groundswell* reports, and the modeling applied, is to provide policymakers with a way to better understand and plan for the likely movement of people within their countries—over time and across different geographies—due to slow-onset climate change impacts. These include impacts on water availability, crop productivity, and sea-level rise. The focus on “internal” climate migration is driven by the consensus that migration within countries, rather than cross-border migration, will be by far the larger phenomenon—yet both require concerted action.

The reports model three internal climate migration scenarios. This helps to address the uncertainties of analyzing migration over the next 30 years. The scenario-based results should be seen as a plausible range of outcomes rather than precise forecasts. The three scenarios are:

- Pessimistic (the reference scenario for this report): high global greenhouse gas emissions combined with an unequal development pathway;
- More inclusive development: with equally high emissions, but a more equal development pathway; and
- More climate-friendly: with lower emissions, combined with an unequal development pathway.



EASTERN EUROPE AND CENTRAL ASIA COULD SEE UP TO 5.1 MILLION CLIMATE MIGRANTS BY 2050

Eastern Europe and Central Asia¹ will be impacted by climate change—but is projected to have lower numbers of internal climate migrants as compared to other regions of focus in the *Groundswell* reports. The projected number of climate migrants could reach 5.1 million or 2.3 percent of the total population at the high end of the pessimistic reference scenario. The average for this scenario is 3.7 million climate migrants by 2050, or 1.6 percent of the region's total population (Figure 1). On average, in the more inclusive development scenario, the number of climate migrants drops by almost 20 percent to 3 million (1.3 percent of the total population) and in the more climate-

friendly scenario, it is cut by over a quarter to 2.7 million climate migrants (1.2 percent of the total population). Here, gains in sustaining livelihoods that help people stay in place come from investing in stringent mitigation measures that reduce emissions globally, in addition to adaptation policies.

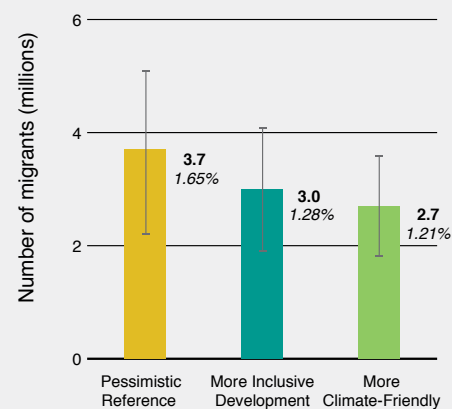
The projected scale of climate migration reflects the overall lower dependency on agriculture of countries in the region. Potential shifts in water availability and crop productivity may thus have more muted effects on migration. In addition, several areas may also see more favorable conditions for agriculture, including new areas (such as northern Kazakhstan) and some that are already important corridors of agricultural production, such as the Ferghana Valley. The favorability of these conditions will need to be considered in conjunction with the potential longer-term impacts on water resources resulting from glacial melt, particularly in Central Asia. Mobility in the region has also been heavily influenced by other non-environmental factors, including historical push and pull factors associated with the breakup of the former Soviet Union, and shifting development trajectories towards an industrial base and higher value agriculture.

SPOTLIGHT ON CENTRAL ASIA AND THE KYRGYZ REPUBLIC

Climate migration in the Central Asia subregion is discussed in more detail below to illustrate specific spatial and temporal trends of climate migration within a local development context, using highlights from the example of the Kyrgyz Republic.

The population of Central Asia is centered in its southern mountain regions and in clusters in northern Kazakhstan, while the rest of the subregion is more sparsely populated. Over half of the population is urban but with differences across countries. Nearly a quarter of the population of Central Asia resides in the area around the Ferghana Valley, which is a hub of agriculture, industry, and ethnic and cultural diversity. Agriculture remains an important economic sector particularly for employment and some Central Asian countries are major food producers.

Figure 1: Projected total numbers and shares of internal climate migrants in Eastern Europe and Central Asia in three scenarios by 2050



Note: The whiskers on the bars in the charts represent the 95th percentile confidence intervals.

¹ For Eastern Europe and Central Asia, aggregated results are depicted for Central Asia, the Caucasus, Eastern Europe, and Turkey. For this region, the Russian Federation as well as certain former republics of the Soviet Union, namely Belarus, Moldova, and the Ukraine, were not modeled because the climate sensitivity of past changes in population distribution in these temperate, higher latitude countries is low. For the same reason, and because they are high income countries, other IBRD countries in Eastern Europe namely Poland and Croatia were not modeled.

Central Asia is already vulnerable to climate change. The subregion could see increased aridity and droughts, which could worsen land degradation and desertification. At the same time, rising temperatures could open other areas to agriculture, such as northern and eastern Kazakhstan, but these effects could be compromised by other adverse impacts on ecosystem services. In addition, warmer temperatures could lead to increased glacial melt with implications for reduced flows in the subregion’s major rivers and for key economic sectors. Stark elevation differences, coupled with constant seismic activity, also mean that the subregion experiences many natural hazards, namely floods, landslides, and earthquakes.

Climate trends for Central Asia consistently show that temperatures are rising, particularly during winter months, though the rate of increase varies across the subregion. Trends in precipitation have been more variable. Uzbekistan and the Kyrgyz Republic have seen increases in total annual precipitation over the last decades, while Turkmenistan has seen slight decreases; and there have been no clear trends in Kazakhstan or Tajikistan. Future projections show continued increases in average annual temperature. Projected changes in precipitation continue to be variable and highly uncertain, though an increased concentration of rainfall is expected in winter months, as is a higher frequency of heavy rainfall events. Central Asia is also likely to experience an increased incidence of drought and longer dry spells.

Central Asian societies are highly mobile, with significant migration both within and across countries, often to and from cities. Migrants—mostly of working age—ease demographic pressures by increasing the size of the labor force, raising productivity and boosting growth. The number of women labor migrants has also been on the rise. Rural populations are actively engaged in labor migration, particularly affected by kin-migration networks through family and social ties. Labor migration especially to Kazakhstan and Russia offsets weak labor markets elsewhere, providing migrants with higher wages and opportunities to send home remittances. Central Asia comprises some of the most remittance-dependent countries in the world, namely the Kyrgyz Republic and Tajikistan. Environmental factors are already driving mobility in Central Asia, particularly as water stress and land degradation affect rural livelihoods, including patterns of transhumance and pastoralism. Environmental migration and displacement have also occurred after disasters or as part of resettlement programs. Climate change may contribute to an intensification of both internal and external migration.

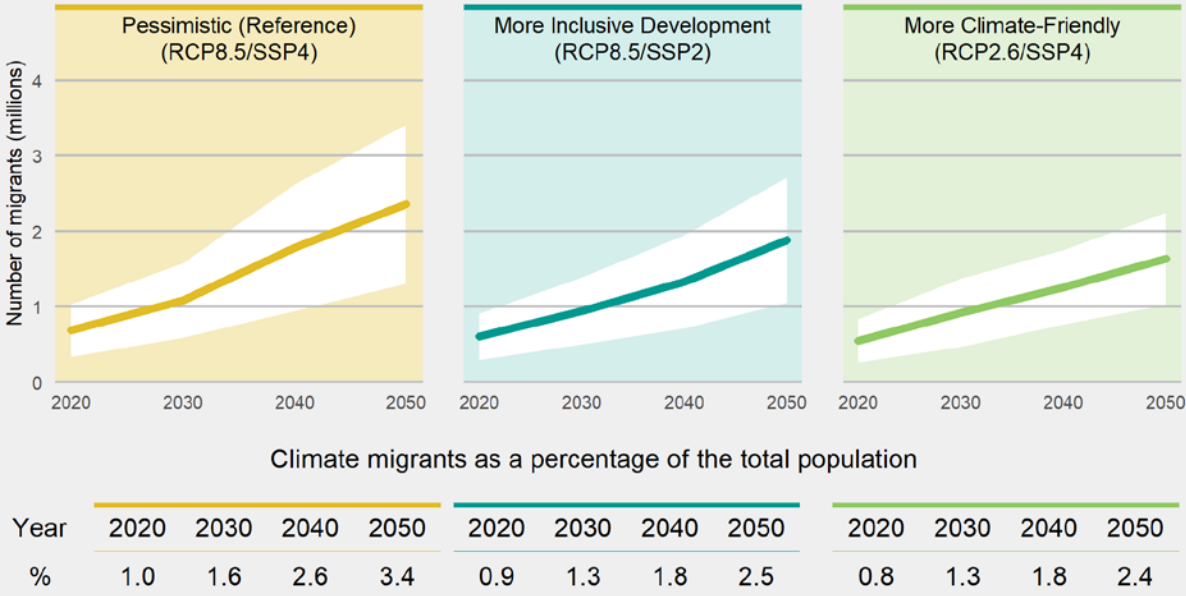
Climate migration is set to increase in the coming decades and Central Asia could see up to 2.4 million climate migrants by 2050

The number of climate migrants in Central Asia is projected to increase over time reaching 1.7 to 2.4 million people by 2050 (2.4 percent to 3.4 percent of the total population) across scenarios (Table 1 and Figure 2).

Table 1: Projected numbers and shares of internal climate migrants by 2050 in three scenarios, Central Asia

Region	Scenario					
	Pessimistic reference		More inclusive development		More climate-friendly	
<i>Central Asia</i>						
Average number of internal climate migrants by 2050 (million)	2.4		1.9		1.7	
Minimum (left) and Maximum (right) (million)	1.1	3.6	1.0	2.8	0.9	2.4
Internal climate migrants as percent of population	3.45		2.55		2.39	
Minimum (left) and Maximum (right)	1.64	5.25	1.30	3.79	1.33	3.46

Figure 2: Projected number of internal climate migrants in Central Asia in three scenarios, 2020-2050



Note: Dark lines represent the average runs for each scenario. Unshaded white areas represent the 95th percentile confidence intervals. The wide intervals are in part a reflection of the fact that climate and sectoral models were selected to represent the widest possible range of outcomes.

The pessimistic reference scenario sees the largest numbers with 2.4 million (3.4 percent of the total population), followed by the more inclusive development scenario with 1.9 million (2.5 percent of the total population), and the more climate-friendly scenario with 1.7 million (2.4 percent of the total population). Climate migration will not occur in isolation, and Central Asia will also see a marked increase in the number of other internal migrants driven by economic, social, or environmental reasons.

Hotspots of climate in- and out-migration reflect the vulnerabilities of ecosystems and livelihoods

Spatial development is climate-sensitive, and hotspots of climate in- and out-migration will matter critically in the future. Climate outmigration will occur in areas where livelihood systems are increasingly compromised by climate impacts, while climate in-migration will occur in areas with better livelihood opportunities.

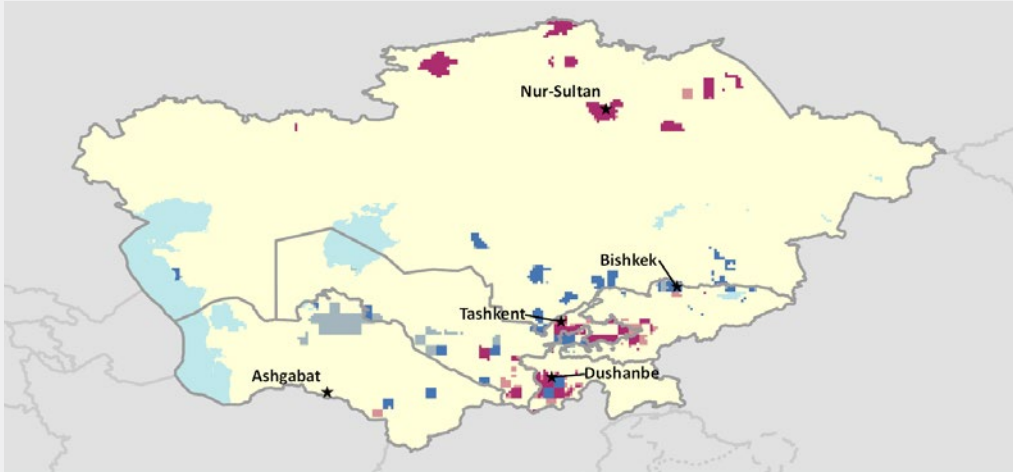
Climate migration hotspots begin to emerge by 2030, and by 2050, these spread and intensify all over the subregion (Figure 3). The Ferghana Valley, the area around Tashkent, and lower-elevation areas of southern Tajikistan (including Dushanbe) are projected to be climate in-migration hotspots, along with denser settlements in northern Kazakhstan (Karagandy, Nur-Sultan, and Kostanay). These reflect projected increases in both water availability and crop productivity to 2050. Climate in-migration will amplify projected population growth trends in these areas, particularly in urban and peri-urban areas, as well as in the Ferghana Valley.

Climate out-migration hotspots are expected along the southern border of Kazakhstan, pockets surrounding the Ferghana Valley in Uzbekistan and Tajikistan, and the area around Bishkek, reflecting projected decreases in water availability and crop productivity. Smaller pockets of eastern Turkmenistan and southern Uzbekistan along the Amu Darya River are also projected to be climate out-migration hotspots for the same reasons.

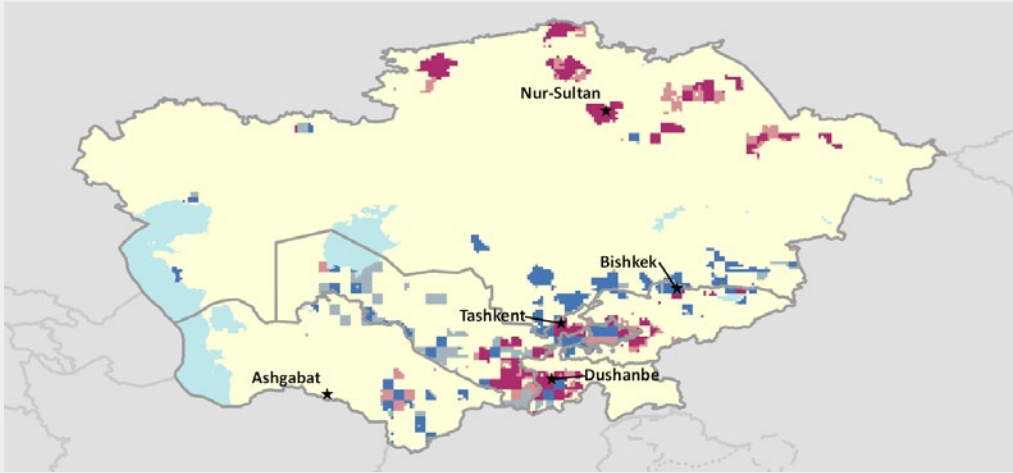
These projections do not take into account potential impacts from glacial melt, which could initially increase, but subsequently decrease water flows in the subregion’s major rivers. Such impacts could drive migration to other areas.

Figure 3: Hotspots projected to have high levels of climate in-migration and climate out-migration in Central Asia, 2030 and 2050

a. 2030



b. 2050



IN-MIGRATION

- High certainty in high levels of climate in-migration
- Moderate certainty in high levels of climate in-migration

OUT-MIGRATION

- High certainty in high levels of climate out-migration
- Moderate certainty in high levels of climate out-migration

Note: High certainty reflects agreement across all three scenarios modeled, and moderate certainty reflects agreement across two scenarios.

Climate Migration in the Kyrgyz Republic

In the Kyrgyz Republic, the scale of climate migration is projected to increase by 2050 in all three scenarios modeled in the report. The total number of climate migrants is largest in the pessimistic reference scenario where by 2050, the Kyrgyz Republic could see up to 0.2 million climate migrants (3.9 percent of the population). Table 2 summarizes key results for the Kyrgyz Republic.

Concrete climate and development action are both needed to reduce the scale of internal climate migration. Lower global emissions pathways could lessen climate change impacts as a driver of internal migration by alleviating stressors related to sea-level rise, and changes in crop productivity and water availability. Understanding the scale and trajectory and differing vulnerabilities and attractiveness of hotspots can provide a stronger basis for proactive and inclusive planning in sending and receiving areas.

In the Kyrgyz Republic, climate change could increase rural-urban migration. It is important that urban planning be climate-informed and ensure inclusive access to adequate housing, job opportunities, infrastructure, connectivity, and services. Given projected changes in water availability, trade-offs in water resource management between major end uses will also need to be considered in conjunction with projected shifts in population distribution and economic activity in sending and receiving areas. Tailored adaptation solutions for the agricultural sector will be needed to ensure the viability of rural livelihoods and should be considered in integrated spatial planning. The Kyrgyz Republic is already taking steps to address the resilience of climate-sensitive sectors and economic diversification through the integration of climate priorities in national development strategies and processes. Action on these fronts will continue to be crucial as the country's development trajectory continues to shift towards an industrial base and higher-value agricultural production.

Table 2: Key climate migration results for the Kyrgyz Republic

Projected number of climate migrants by 2050, pessimistic reference scenario (average)	0.2 million (3.9 percent of total population)
Climate in-migration hotspots	Ferghana Valley including Osh and Jalal-Abad Smaller areas north of Lake Issyk-Kul and to the south of Bishkek
Climate out-migration hotspots	Bishkek and surroundings North of Lake Issyk-Kul including Karakol Southwest and central region near Lake Son-Kul
Climate migration in/out of livelihood zones*	In-migration: pastoral and rangelands with small positive net change Out-migration: dense settlements and irrigated croplands, with small negative net change

Note:

* In general, projections display large confidence intervals across livelihood zones, ranging from positive to negative depending on the category.

USE THE WINDOW OF OPPORTUNITY TO ACT NOW

Internal climate migration may be a reality, but it does not have to be a crisis. Concerted action on climate change mitigation and adaptation together with inclusive development policies, and embedding climate migration into policy and planning, could help to substantially reduce the number of internal climate migrants by 2050. The *Groundswell* reports identify key policy recommendations to address the underlying drivers of internal climate migration and prepare for expected migration flows.

1. Cut global greenhouse gases now to reduce the climate pressures that drive internal climate migration.

Managing the scale of internal climate migration will require immediate collective action to get on lower global greenhouse gas emission trajectories with differentiated strategies across regions and countries. Five years after the Paris Agreement, the world is still headed for at least 3°C of warming by 2100. Ambitious action to curb global emissions is critical to reducing the burden of climate change impacts on key resources, livelihood systems, and urban centers that may drive people to migrate in distress.

In the lead-up to COP26 in Glasgow, countries are updating and enhancing their commitments under the Paris Agreement. This is a critical opportunity to ratchet up ambition to put the world on track for net-zero emissions by mid-century and have a chance at limiting global warming to 1.5°C. Adhering to the Paris Agreement, and staying close to the more climate-friendly scenario used in this report, would help substantially reduce internal climate migration. Urgent and aggressive action on inclusive, resilient, and sustainable development alongside global action on emissions reductions will also be needed.

2. Embed internal climate migration in far-sighted green, resilient, and inclusive development planning.

Integrating internal climate migration in development planning is critical to address the poverty factors that make people particularly vulnerable to climate change impacts, such as a lack of viable livelihood options and lower quality assets. This is particularly important as the most vulnerable groups tend to have the fewest opportunities to adapt locally or move away from risk—and when moving they tend to do so in adverse circumstances. Systematic planning at the nexus of climate, development, and migration can help broaden the opportunities for people to adapt where they live, or else enable them to move under better circumstances.

Far-sighted development planning can also enable countries to pursue green, resilient, and inclusive economic transformations. Notably, accounting for internal climate migration alongside broader demographic patterns can help fuel momentum towards the next generation of skills and jobs in both sending and receiving areas. Good management of demographic transitions is vital in this regard and will need to be accompanied by continuing investments to enable working-age populations to find opportunities in productive and climate-resilient labor markets, with good access to health care, education, and public services.

Climate-smart urban and rural transitions can also provide important win-win opportunities to drive economic transitions. Primary and secondary cities can be promoted as hubs of innovation and knowledge transfer, accelerators of the digital transformation, and centers of green technology and resilient infrastructure in key sectors, including energy, water, and transport. Cities have opportunities to leverage rural-urban migration and broader urbanization trends in many regions, capitalize on agglomeration effects, and develop economies of scale. In rural areas, nature-based solutions emphasizing the protection of ecosystem services can benefit agricultural productivity, provide buffers against floods and droughts, and enhance management of landscapes, forests, and watersheds on which livelihoods depend. More broadly, flexible social protection systems with robust and rapid delivery can significantly increase resilience to climate change and other shocks, particularly for the most vulnerable.

3. Plan for each phase of migration, so that internal climate migration as an adaptation strategy can result in positive development outcomes.

Planning for internal climate migration means accounting for all phases of migration—before, during, and after moving. Before migration, adapt-in-place solutions can help communities stay in place where local adaptation options are viable and sensible. During migration, policies and investments can enable mobility for people who need to move away from unavoidable climate risks. After migration, planning can ensure that both sending and receiving areas are well equipped to meet the needs and aspirations of their populations.

Policy makers will need to understand and account for differences in vulnerabilities across landscapes to provide a stronger basis for adaptive practices that would enable people to stay in viable livelihood systems. Integrated management of landscapes and natural resources, combined with resilient agri-food systems, will be central to ensuring livelihood sustainability and food security, particularly in densely populated localities or in productive areas that may already be stretched. Diversified livelihoods that are not tied to climate-sensitive sectors need to be available as options to adapt in place. Careful attention to the carrying capacity and reach of social, service delivery, economic, and livelihood systems is also key for spatial planning.

For people who need to move away from unavoidable climate risks, policy makers will need to enable mobility by creating supportive environments for planned and orderly migration into areas of low risk and high opportunity. Inclusion and sensitivity to migrants' needs will be crucial. In many regions, internal climate migration will have to be managed as an important part of a broader set of adaptation options and in the context of existing patterns of mobility. Targeted interventions can be deployed in the short and medium term to support migrants. For instance, informed decision-making can be facilitated for migrants through better access to financial resources and social services, increased financial literacy, secured legal status, and pre-departure training, skills, and orientation. Investments can also make social protection portable and scalable by easing registration and communication in receiving areas, particularly major urban centers; improving access to benefits through mobile money and digital identification systems; and allowing for social welfare systems to be adaptable to changing needs. Policy can also maximize the potential of financial and social remittances to bolster adaptation investments and income-generating activities and encourage knowledge transfer through diasporas and social networks.

Policy makers will also need to ensure that both sending and receiving areas are adequately prepared to ensure the resilience of those who remain and to integrate additional flows of people. Many of the climate in-migration hotspots identified in the regions covered by this report are major urban areas. These cities will need to provide advanced public service provision, affordable housing programs, and employment opportunities for increasing numbers of people. Fostering integration and social cohesion can also help ensure that destination areas leverage the opportunities that migrants bring to fill labor and demographic gaps, diversify human capital, and bring new skills and knowledge.

National and city planning systems will need to account for important changes to existing settlement patterns. These will need to go hand in hand with climate-resilient infrastructure investments and improved connectivity networks, especially as cities continue to grow and draw migrants from rural areas. Even cities projected to be out-migration hotspots and thus see potentially slower population growth will still continue to support large numbers of people who may face escalating climate risks. Urban planning and land use management will need to be inclusive and address the needs of the most vulnerable, who often live in areas with inadequate services, including informal settlements, sometimes on marginal land exposed to floods and other hazards. Vulnerable people, including those that are lower-skilled, poorer, and older, may also be unable to move away from areas of high risk. Involuntary immobility in the context of climate change should therefore be equally considered in development planning.

4. Continue to invest in improving understanding of internal climate migration to inform well-targeted policies.

More investments are needed in research at scale, including new, more granular data sources and differentiated climate change impacts, to better contextualize and understand internal climate migration at the regional and country level. The novel and transparent modeling presented in the Groundswell reports is a starting point, but decision-makers will need more spatially detailed projections to identify the most appropriate strategies in each location.

State-of-the-art models on the current and future trends of internal climate migration continue to be crucial to inform early action. Updated models using an array of climate change impacts and other biophysical, socioeconomic, and political indicators factors can help better inform decision-making at appropriate scales. These should also account for the inherent uncertainties in the way climate change impacts will play out in given locales that will affect the magnitude and pattern of climate change-induced movements. Important strides have been also made in new research to extend regional and national-scale modeling, and to gain further insights into how climate stressors impact individual decisions to move. The need to create a shared understanding of the scale, trajectory and spatial dimensions of internal climate migration remains critical to support development policy and planning.



Photo Credit: World Bank