

Migration and Climate Change: How will Climate Shifts Affect Migration Trends?

Overview

There is growing concern that climate change may encourage large numbers of people to migrate over long distances. Yet a review of evidence by the Development Research Centre on Migration, Globalisation and Poverty (Migration DRC) questions the assumption that this type of migration is a likely outcome of climate change, as existing research shows that there is no direct relationship between climate shifts and long-distance migration. For poor people, in particular, long-distance migration is likely to be difficult in the face of deteriorating environmental conditions. Climate change may provoke some migration but this will likely occur within existing migration channels — at least at the outset. Given uncertainties about the timescale and geographical distribution of climate change, however, further research is needed to better predict how climate change will affect migration in different parts of the world in future decades.

Re-thinking climate change and mass migration

Estimates of the total number of people who will be displaced by climate change range from 150-200 million (Stern 2007) to one billion (Christian Aid 2007). However, the 4th Assessment Report of the Intergovernmental Panel on Climate Change describes such estimates as, at best, 'guesswork'. These figures often rely on crude population estimates and they assume that populations will permanently leave areas affected by climate change impacts. This latter assumption is problematic, as many people may remain tied to their homes, especially if they lack social connections outside their communities. Indeed, if migration driven by climate change does begin to occur, it is likely that it will be inter-related with existing migration flows because of the importance of social networks and 'capital' constraints in determining people's ability to migrate. Given these factors, the Migration DRC has sought to evaluate how projected climate shifts may interact with current migration flows. This marks a pragmatic first step towards understanding how climate change will shape future migration patterns, although the unpredictable nature of climate change makes such forecasts difficult.

About 3 percent of the world's population currently migrates internationally, often in search of work. This includes large numbers of people moving from the global south to the north, as well as people moving between countries included in these broad designations. It is estimated that even larger numbers of people currently migrate internally, particularly in developing countries, where migration to cities and rural sites of commercial agricultural production is common. There is a large literature on the causes of migration, which includes a measure of agreement that the key drivers of migration fall into three broad categories. These include factors related to the region or country of origin, including political instability and conflict, lack of economic opportunities, and lack of access to

resources ('push' factors); factors related to the region or country of destination, including the availability of employment and demand for workers, higher wages, political stability or access to resources ('pull' factors); and intervening factors that facilitate or restrict migration, including ease of transportation, family or social networks, government policies, economic ties such as trade and investment linkages, or social and cultural exchanges.

Any migration 'push' factors created by climate change can be expected to interact with other causes of, or constraints to, migration, and this is likely to be context-specific. In some cases, migration flows may be concurrently shaped by population growth. Mean estimates suggest that the world's population will increase to nine billion persons by 2050, with 98 percent of this growth occurring in the developing world (35 percent of all growth is expected to take place in sub-Saharan Africa alone). The number of persons aged 15-24, which is the age group the most likely to migrate, is expected to double by 2050, a substantial demographic shift that will also be felt most profoundly in developing countries. It is uncertain what the implications of this uneven population growth will be, but they could increase the number of people who consider migrating internally or across national borders, irrespective of climate change impacts.

Migration and environmental change: what we know

There are few past ecological events that provide a model for understanding how the effects of climate change will impact migration, as projected climate change will occur on a far greater scale than other recent climate 'shifts' or ecological disasters, which have largely been isolated to specific areas or regions. There is also much uncertainty about how quickly projected changes will occur – and about how severe climate



A young girl in a displaced persons camp in Banda Aceh, Indonesia, following the Indian Ocean Tsunami in December 2004. An estimated 400,000 persons were displaced by the tsunami, but very few migrated over long distances and most were absorbed by neighbouring regions. Photo © ILO 2005.

Global warming and existing migration trends

Some impacts of climate change can be predicted with a degree of certainty. Rising temperatures and a decline in rainfall are projected in many regions (see figure on Page 3), meaning that existing dry land areas, including the African Sahel and the Mediterranean region, are likely to expand. Most climate change models also predict that rising sea levels will threaten low-lying coastal regions, pushing populations further inland in the absence of measures to prevent flooding. In the short-to-mid-term, there is likely to be increased flooding in river basins and floodplains due to the accelerated melting of ice and increased storm intensity. These environmental shifts could cause people to leave affected areas but, as we have seen, questions remain about where affected populations will migrate to and what factors may facilitate or hinder their migration. In some cases, people may be unable to leave areas with deteriorating environmental conditions, and here the end result may be increased suffering for local inhabitants in the absence of interventions by governments or NGOs.

change impacts will be. While these difficulties are significant, it is worth noting that existing studies have found no direct link between ecological shifts and a rise in long-distance migration. Although a recent study in South-West Mexico found a link between decreased rainfall — which undermined local agriculture — and increased migration to the US (Munshi 2003), studies in the Mexican states of Zacatecas and Durango have shown a *decline* in migration to the US during times of decreased rainfall or drought (Kniveton *et al.* 2008). These latter findings resonate with studies in Burkina Faso (Henry *et al.* 2005) and Mali (Findley 1994), which showed that droughts in the 1970s and 1980s, respectively, were linked to a decrease in international, long-distance migration and a steady increase in short-distance labour migration to nearby areas.

Recent environmental catastrophes, including the Indian Ocean Tsunami, which devastated large sections of South Asia in late 2004, and Hurricane Katrina, which inundated the city of New Orleans and surrounding areas on the Gulf Coast in 2005, have produced context-specific migration flows. The tsunami claimed the lives of an estimated 200,000 persons and displaced around 400,000 others, yet the vast majority of those who were forced to leave their homes were absorbed by nearby regions. Prior to Hurricane Katrina, meanwhile, up to 70,000 inhabitants of New Orleans, most of whom were living in poverty, were unable to flee the city before the storm hit. Around 1.3 million people did leave the city, most of them migrating to other metropolitan areas in the US, and 60 percent of these people had not returned to the city by 2007. In both these cases, there were significant environmental 'push' factors encouraging residents to leave affected areas, yet people's mobility was mediated by a host of other factors that had more to do with socio-economic conditions than the devastation itself.

The impacts of climate change are likely to be uneven in different geographical regions and this will have varying effects on current migratory patterns. In the Southern United States and Southern Europe, for example, most climate models predict a rise in temperatures and a decline in rainfall, which could make current agricultural production in these areas less viable. This could disrupt established patterns of international migration to these regions, where migrants have often found work on commercial farms. Conversely, in Northern Europe and parts of Central Russia the growing season is likely to be considerably lengthened by climate change, which could significantly boost agricultural production in these regions. This shift could increase the volume of existing migration flows to these areas from Central Asia and South-East Europe in response to greater demands for migrant labour.

Climate change may also have uneven impacts on poorer countries, which lack the infrastructural and institutional capacity to administer large-scale responses to climate shifts. Increased flooding, water stress or drought could encourage more people in countries from the global south to move from rural areas to cities, especially if agriculture in the countryside is undermined by unfavourable weather. Many slums are situated in parts of cities that are most at risk of climate change impacts, meaning that rural migrants may face renewed environmental threats if they settle in these areas. As of 2005, an estimated one billion people resided in slums, and a further increase in slum populations would make the challenge of providing basic health and education services to slum residents even greater. These factors underscore the need for programmes and policies that will help poor people in both rural and urban areas adapt to the significant threats to their livelihoods posed by climate change.

Country case studies: Ghana and Bangladesh

Bangladesh is projected to be among the countries the most adversely affected by climate change. Increased storm intensity could potentially worsen seasonal flooding that occurs in many parts of the country, while persistent drought is predicted in the North-West and rising sea levels may threaten low-lying coastal areas in the South if interventions are not forthcoming. These impacts may be exacerbated by demographic and social factors in Bangladesh. The country is one of the most densely populated in the world and there is a high dependency on natural resources for subsistence, making Bangladeshis particularly vulnerable to climate shifts. One outcome of climate change may be increased rural-to-urban migration if flooding and drought make rural livelihoods less tenable. This poses a dilemma as urban slums in Dhaka and Chittagong, which house many recent migrants to these cities, are situated in areas which are vulnerable to extreme weather, including flooding and mudslides. It is important to acknowledge, however, that the extent to which rural livelihoods will be undermined by climate change, thus encouraging people to migrate, remains largely uncertain. Climate change is also unlikely to directly affect some 'drivers' of migration in Bangladesh, such as the social networks that help to facilitate a large amount of overseas migration.

Climate change projections for Ghana bear some similarity to those expected for Bangladesh. Most of the northern and central parts of the country are expected to see a significant decline in rainfall, while increased storm intensity and rising seas may threaten coastal areas in the southern part of the country. A decline in rainfall would lead to lower river levels, which could reduce the output of Ghana's hydro-electric power stations (which currently produce 80 percent of the country's electricity) up to by 60 percent by 2020, according to one

estimate. One of Ghana's main agricultural export crops, cocoa, does not perform well in drought, meaning that a significant decline in rainfall could also threaten the country's commercial cocoa farms. Worryingly, negative impacts of climate change in Ghana could potentially compound one another. For example, a decrease in the viability of farming in rural areas might well encourage people to migrate to urban areas, yet the economies of Ghanaian cities may also be undermined by climate change impacts, diminishing the prospect of rural migrants finding gainful employment in metropolitan areas.

Policy implications

As this policy briefing has shown, the effects of climate change on migration are not fully understood, partly due to uncertainty surrounding the onset of climate change impacts. It is in the interest of policy-makers to support further research in this area, as this would provide the knowledge base required for more nuanced policy decisions. Governments can also respond to projected climate change impacts by proposing climate-sensitive development policies, including pro-poor climate change adaptation policies that attempt to build local resilience and adaptive capacity in developing countries, thus reducing the need for the poor to migrate away from affected areas. These types of policy should be incorporated into National Adaptation Programmes of Action (NAPA), which are designed to help less-developed countries plan for climate change impacts. Furthermore, both migration and climate change should be accounted for in poorer countries' development plans, including Poverty Reduction Strategy Papers (PRSPs) and Country Strategy Papers. This would mark a pragmatic first step towards accounting for the potential impact of climate change on the migration-development nexus.

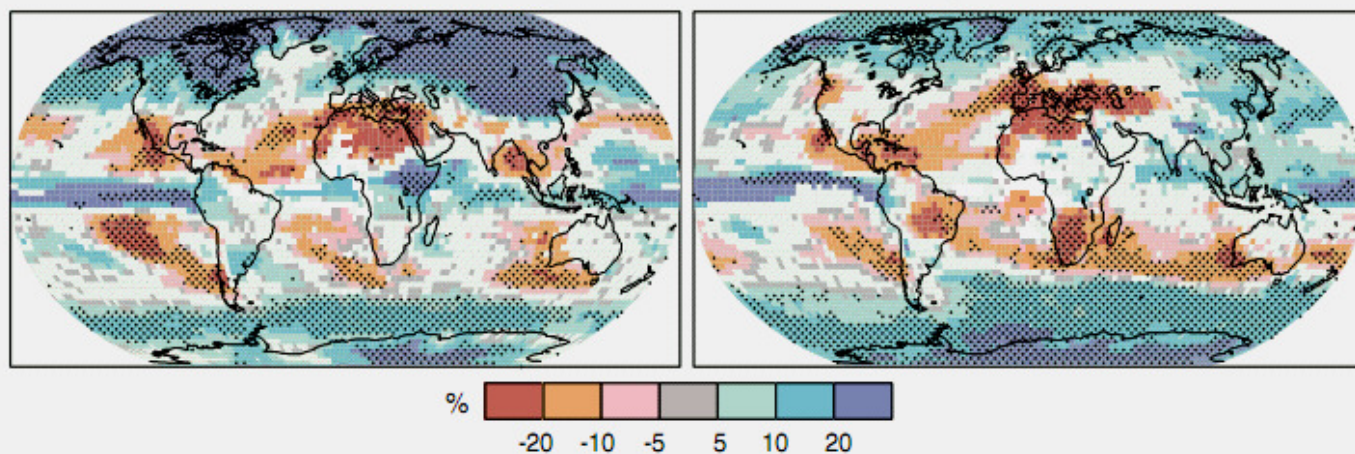


Figure 1. Multi-model projected changes in precipitation. Figures show forecasts for 2090–2099 compared to 1980–1999 based on multiple climate models. Coloured areas show relative changes in precipitation (in percentages) for Dec-Feb (left) and June-Aug (right). White areas are where less than two-thirds of the models agree and stippled areas are where more than 90 percent of the models agree. Models were developed as part of the IPCC Special Report on Emissions Scenarios. Source: Solomon, et al (2007).

References

- Christian Aid (2007). *Human Tide: The Real Migration Crisis — A Christian Aid Report*. London: Christian Aid.
- Findley, S.E. (1994). 'Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983-1985 Drought'. In: *International Migration Review* 25 (3): 539-553.
- Henry, S., Schoumaker, B., and Beuchemin, C. (2005). 'The Impact of Rainfall on the First Out-migration: A Multi-level Event-History Analysis in Burkina Faso'. In: *Population and Environment* 25(5): 423-460.
- Kniveton, D., Schmidt-Verkerk, K., Smith, C. and Black, R. (2008). *Climate Change and Migration: Improving Methodologies to Estimate Flows*. Geneva: International Organisation for Migration.
- Munshi, K. (2003). 'Networks in the Modern Economy: Mexican Migrants in the U.S. Labour Market'. In: *Quarterly Journal of Economics* 118(2): 549-599.
- Solomon, S. et al. (2007): 'Technical Summary'. In: *Climate Change 2007: The Physical Science Basis; Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis M., Averyt K.B., Tignor, M. and Miller H.L. eds. Cambridge and New York: Cambridge University Press.
- Stern, N. (2007). *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.

Key Readings

A comprehensive resource list on literature related to migration and climate change is available on the Migration DRC's web site at: www.migrationdrc.org/publications/resource_guides.html. Below are some selected key readings:

- Black, R., Kniveton, D., Skeldon, R., Coppard, D., Murata, A., and Schmidt-Verkerk, K. (2008). 'Demographics and Climate Change: Future Trends and Their Policy Implications for Migration'. Migration DRC Working Paper T27. Brighton: Migration DRC, University of Sussex. Available at: www.migrationdrc.org/publications/working_papers/WP-T27.pdf.

- Black, R. (2001). 'Environmental Refugees: Myth or Reality?'. Working Paper 34. Geneva: United Nations High Commission on Refugees.
- Brown, O. (2008): 'Migration and Climate Change'. IOM Migration Research Series, Paper No. 31. Geneva: International Organization for Migration.
- Massey, D., Axinn, W. and Ghimire, D. (2007): *Environmental Change and Out-Migration: Evidence from Nepal*. Ann Arbor, Mich.: Population Studies Center, University of Michigan.

Development Research Centre on Migration, Globalisation and Poverty

The Migration DRC aims to promote policy approaches that will help to maximise the potential benefits of migration for poor people, whilst minimising its risks and costs. Since 2003, the Migration DRC has undertaken a programme of research, capacity-building, training and promotion of dialogue to provide the strong evidential and conceptual bases needed for such policy approaches. This knowledge has also been shared with poor migrants, with the aim of contributing both directly and indirectly to the elimination of poverty. The Migration DRC is funded by the UK Government's Department for International Development, although the views expressed in this policy briefing do not express DFID's official policy.

How to Contact Us

This briefing was written by Jon Sward with input from Richard Black, Dominic Kniveton and Kerstin Schmidt-Verkerk. For further information on this work please contact Saskia Gent (s.e.gent@sussex.ac.uk), Acting Research Manager for the Migration DRC.

For more information on the Migration DRC, please contact:
Sussex Centre for Migration Research
Arts C, University of Sussex
Falmer, Brighton BN1 9SJ, United Kingdom
tel: +44 1273 873394
fax: +44 1273 873158
email: migration@sussex.ac.uk
web: www.migrationdrc.org