Migration and Climate Change: What do we know? What can we expect?

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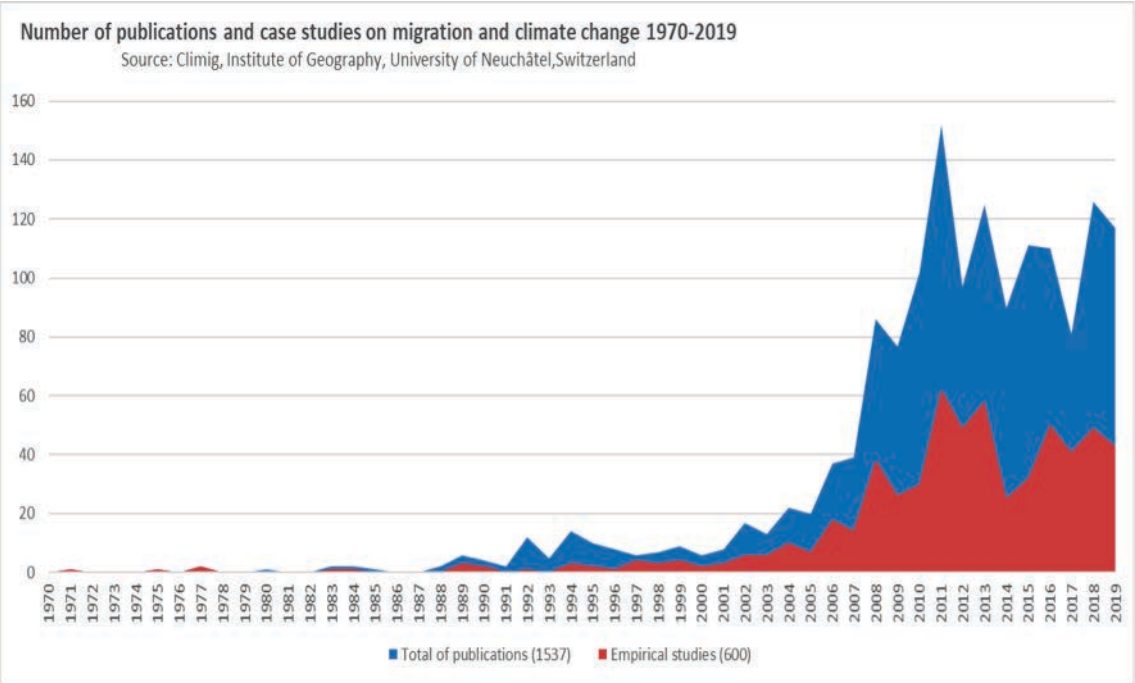
While it is difficult to predict the impact of future climate changes on human mobility by combining climate and migration models, past experiences of migrations give precious information on the environment/migration nexus. They allow to establish a list of the populations most at risk and the possible resulting emigration. In that context, the amount of systematic research on environmental migration raised sharply in recent years (Figure 1).

Figure 1: The evolution of the publications and case studies on migration and climate change between 1970 and 2020



Source: CliMig, University of Neuchâtel: http://www.unine.ch/geographie/climig_database

Empirical studies very often distinguish between slow and fast onset events. Droughts, sea-level rise, coastal erosion, and glacial melting are labelled "slow-onset" whereas hurricanes, flash-floods, torrential rains and landslides are labelled "fast onset" or "sudden onset." A second common distinction is made between direct and indirect links. A direct link occurs if, for example, coastal erosion forces the inhabitants of a village to relocate or if people have to flee a hurricane. An indirect link occurs if progressive desertification affects traditional farming practices and leads some people to leave the affected region or if a drought exacerbates conflicts over resources, contributing to violence, which then may push people to flee. In practice there is often a continuum between fast and slow onsets as well as between direct and indirect impacts and clear-cut distinctions are difficult. Drought, for example, can be considered fast or slow according to circumstances and has direct and indirect impacts. What is more, the degree to which a given society or community is able or not to adapt to changing environmental conditions needs to be factored into the analysis. In any case, none of the links can be considered as "natural". The presence and actions of people alter the nature and extent of environmental phenomena and the same onset, fast or slow, will be apprehended and represented in different ways according to social, religious, cultural, and economic contexts. Despite these conceptual complexities, the abundance of literature on this topic makes possible some general statements regarding human mobility and environmental change.

Three consequences of climate warming forecasted in the reports of the Intergovernmental Panel on Climate Change (IPCC) for the end of the 21st Century appear to be the most threatening potential causes of migrations:

1. The increase in strength of tropical hurricanes and in the scale of flooding due to the augmentation of evaporation correlative to temperature increase.

2. The growth in the frequency of droughts, with evaporation contributing to a decrease in soil humidity, often associated with food shortages.

3. The increase in sea levels resulting from both water expansion and melting ice.

Hurricanes, torrential rains, and floods

The consequences of hurricanes and floods on population displacement are relatively easy to identify in that they manifest themselves in a brutal and direct manner. In most cases, displacements tend to be temporary and over short distances. Living mainly in poor countries, the victims have few resources for long distance mobility and the majority of the displaced return as soon as possible to reconstruct their homes in the disaster zone. The results from numerous research projects conducted worldwide tend to confirm this point with remarkable regularity. On a global level, the general conclusion is thus that the potential of hurricanes and torrential rains to provoke long-term and long-distance migrations remains limited, especially when such migration involves crossing an international border. This is not to say that such migrations this will not occur in the future and provisions for protecting the rights of the displaced are currently explored by such entities as the Platform on Disaster Displacement (https://disasterdisplacement.org/). Given a changing climate and the associated likely increase in the frequency of extreme events, a central research question today is the understanding of the impact of changes in the frequency of repetition of fast onset events on mobility.

Drought and desertification

A lack of drinking and irrigation water only generates progressive departures. Case studies bring to light a contrasted picture of the consequences of these kinds of change for displacements. On the one hand, there are many well-known cases of mass population departures, in particular in Africa (Sahel, Ethiopia) but also in the Americas (Argentina, Brazil, Mexico), in Central Asia, and in Southern Asia. On the other hand, many researchers strongly relativize the possible direct link between drought and migration by highlighting that the latter, in general, is the last resort when all other survival strategies have been exhausted, and that environmental push factors are just one of several factors influencing displacement decisions. During the 1994 drought in Bangladesh, for example, only 0.4% of households had to resort to emigration. These researchers hold similar views to those of the Nobel Prize winner for Economics, Amartya Sen, in remarking that famines (and subsequent migrations) are, in general, only marginally the direct result of environmental factors and much more closely linked to political forces.

A now classic multivariate analysis by Henry, Boyle, and Lambin on interprovincial migrations in Burkina Faso showed a long time ago that environmental variables only contributed a small part to explain migrations. In certain contexts, the impact can even be reversed, as was the case in Mali during the drought of the mid-1980s: a reduction in international emigration was observed due to the lack of available means to finance the journey. Overall, drought seems to cause an increase in the number of people who engage in short-term rural to rural types of migration but does not affect, or even decrease international, long-distance moves. The conceptualization of drought-affected peoples as helpless victims who are left with no choice but to flee seems to be false, since this view turns a blind eye to individual, community, and national adaptation efforts. Meanwhile recent literature also points to the fact that considering migrants as the emblematic victim of climate change misses the fact that those who are not in a position to move because of a lack of resources –so called trapped populations– are often the most affected by environmental hazards. This situation holds true not only in Southern countries but also in more affluent regions, as illustrated by the aftermath of Hurricane Katrina in the U.S. Consequently, a new framing of the whole issue recently emerged which, rather than considering migration as the symptom of a failure to adapt, attempts to take into account the possible positive impact migration can bring directly or indirectly, for example through the channelling of remittances toward adaptation investments.

Rising sea levels and coastal erosion

While drought and desertification do not foreshadow massive population displacements due to climate change, the potential for migration linked to an increase in sea level is considerable. In contrast to droughts, this phenomenon is irreversible and manifests itself progressively over a long period of time. Rising sea levels could make migration the only possible option for the population affected. The localization of the consequences of rising sea levels is a relatively easy task, because the configuration of coastlines, their altitude, and population are known and thus permit simulations and projections. Hence, it is possible to calculate –on a global scale– the number of persons living

in low elevation coastal zones and threatened by rising water levels, higher tides, or farther-reaching waves. McGranahan et al. define low elevation coastal zones as being situated at an altitude of less than·10 meters. Even though these zones only account for 2.2 % of dry land, they presently are home to 10.5% of the world population, some 602 million people, of which 438 million live in Asia and 246 million in the poorest countries of the world. On the basis of the scenario of a sea level increase of 0.3 to 0.8 m, it seems reasonable to consider the 150 million people living at an altitude of less than 1 m as directly vulnerable during the next century. Mainly situated in the major river deltas and estuaries, the flood zones are particularly populated in South Asia (Indus, Ganges Brahmaputra, etc.) and East Asia (Mekong, Yangtze, Pearl River, etc.). These two regions account for three-quarters of the population at risk. Certain Island nations, such as Tuvalu or the Maldives, are –in the medium-term– among the most threatened, as they are situated only centimetres above sea level. Their submersion might lead to a new form of statelessness.

Conclusion

Environmental hazards clearly have the potential to generate migration flows. Global warming could lead to major forced displacements. The latter will result principally from rising sea levels but will only progressively manifest themselves over the forthcoming centuries, with the exception of the flooding of certain islands or very low-lying areas. The increase in frequency and/or intensity of droughts and meteorological disasters predicted by climatic models will also have impacts in terms of migrations but these will mostly remain regional and short-term.

Three possible outcomes of environmental hazards can be identified in terms of population movements: long-term migration, short-term displacement, and immobility when populations are trapped without the resources to move. Each of these movements corresponds with multiple drivers and is embedded in socio-economic, political, and demographic processes. For the most part, environmental factors are usually merely contributing to the decision to move beside economic, political, demographic, and social drivers, which are themselves mediated through socially, politically, and economically determined institutions and structures that influence human mobility. Due to the number of factors involved, no climatic hazards inevitably result in migrations (multicausality). This is a message of hope: many authors note that even if natural disasters become more frequent in the future, political efforts and measures of protection will be able to lessen the need to emigrate. Even rising sea levels could be partially counteracted by the erection of dykes or the filling in of threatened zones.

Another message of hope is the fact that mobility and migration are not only the symptom of the failure of a community to adapt to environmental change but very often open opportunities to successfully cope with adversity. Recent research shows for example that households who have a member abroad can use financial or knowledge transfers to sustain their livelihoods and adapt to changing contexts.

But there remain two conditions: first climate warming should remain moderate and second the necessary financial means should be provided to the most affected countries, which are often the poorest and the most populated.

Further Reading

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