

CREATURES



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New Era of Migration: Adapting to Climate Change

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Introduction

Migration connects people and places to one and another. It has shaped our history, languages and culture, and it will continue to shape society in the future, particularly under climate change. Because we all can feel the “first symptoms” of climate change, many of us wonder whether, where and how many people will be moving away from their homes, as conditions deteriorate.

From the media coverage of human migration, we receive only a partial and incomplete picture of the human migration to come. Its focuses on the most extreme cases: showing people arriving by boat to southern Europe, fleeing the war in Middle East, ethnic minorities escaping violence in Myanmar for Bangladesh, Mexicans climbing the border wall to enter United States. All these tend to emphasize catastrophic and large scale movements of people.

The numbers of migrants today are changing for various political reasons, but it does appear to be magnified due to the effects of climate change (Geisler and Currens, 2017). Yet, there are critical angles of migration, including its complex and counterintuitive relationship with climate change, that are usually not reported, and are therefore less understood by the general public and policy-makers. The real story of migration—including climate-related migration, extends far beyond the news headlines.

What we now understand from extensive research on human migration and climate change is that migration is adaptation strategy (Black et al., 2011), meaning that people can reduce their vulnerability to climate change by migrating to less vulnerable areas. Many factors (economical, social, demographical) motivate whether a person or family will migrate. These effects are closely interlinked so it makes little sense to consider them in isolation. Vulnerability to climate change affects many of the factors that determine whether and which people migrate, as well as the ability to migrate (McLeman, 2014). Vulnerability is defined as the predisposition of a place or community to be negatively impacted by climate hazards (e.g. extreme heat, cold, sea level rise). It is a function of exposure to climate change,

sensitivity to that changing climate and adaptive capacity to tolerate or withstand change (IPCC, 2012).

Climate vulnerability is negatively associated with social, political and economical capital. Migration is also correlated with capital but the relationship is a positive, suggesting that ability to move is connected with availability of financial and social resources. Applying above insights to the climate vulnerability and migration relationship, Black et al. (2011) identified so-called trapped populations. Trapped population are people who are unable to migrate from most vulnerable places due to limited social and economical resources. Trapped populations deserve our attention under climate change, as those that do not move may face more dire situations than those that do.

Another group of people that deserves attention are those who are able to migrate but are moving to places that are highly vulnerable under climate change. In these cases, migration is maladaptive, meaning that climate vulnerability is not reduced by migration to another region/country. One example is the flow of people from rural regions in China to large urban area along the coast (Chan, 2012), usually attracted by job opportunities in urban areas. As a result of this migration, however, cities are challenged to provide climate-resilient infrastructure, sufficient housing, sanitation, education and health care for a growing population. Coastal areas of China also are predicted to experience increased flooding and the cost of damage due to flooding in major cities is estimated to reach tens of billions of dollars (Hallegate et al., 2013).

The relationship between climate and migration relationship also is a “two-way street”. On the one hand, climate change affects the vulnerability of people and thus patterns of migration. On the other hand, migration also affects vulnerability to climate change which, in turn, may act as a catalyst for future migration. There is, however, a dearth of research on this bi-directionality.

Empirical evidence

In a study published last year Greceuet et al. (2017) analyzed the relationship between climate vulnerability and migration patterns around the world. We used the Global Adaptation Index housed at the University of Notre Dame (ND-GAIN) as a measure climate vulnerability in 178 countries around the world. Climate vulnerability is composed of 6 socio-economic sectors, and each sector includes measures of exposure, sensitivity and adaptive. In total, there are 45 indicators for each of 178 countries for a period of 20 years. All the data are drawn from open and peer-reviewed sources. Analysis of these data provides a ranking of vulnerability by country, profiles of individual countries, and country and sector comparisons.

In this study, we compared this vulnerability by country with data on international migration flow of past 5-years estimated by Abel et al. (2014), and we found that people generally migrate from countries of higher vulnerability to lower vulnerability. As a result, global average vulnerability over the last five years has declined due to migration, resulting in about a 15% reduction in vulnerability worldwide.

Our findings of reduced vulnerability due to migration, however, is generally restricted to people migrating from the least vulnerable countries (e.g. country that are either less exposed to climate hazards or they have capacity to prepare and respond to it), suggesting the potential for trapped populations in the most vulnerable countries (e.g. countries, that are exposed to climate hazard and lack any capacity to prepare and respond to climate event). For example, in Sub-Saharan Africa, the majority of international migrants move within the continent, mostly to countries with same or higher vulnerability. This suggests that some African migrants are trapped in a region with relatively high—and uniform—climate vulnerability.

Thus, migration reduced risk of climate change for many, this option is not available to all. Thus, a key question is: what strategies might help people to move from the most vulnerable areas and flow in “right direction” (toward lower vulnerability)?

Strategies

Although the parallel is imperfect, and people are not the same as plants and other animals, we can learn some things about migration from ecology. Ecologists have long-studied the movement, adaptation and extinction of species as a response to climate and other environment change. For example, the ecological literature has discussed how to effectively manage species movement, for those species that are vulnerable to climate change and have little opportunity or time to adapt. It is estimate that by the end of the century about 20% of all land area will undergone changes in its original climate (Mahlstein et al., 2013). Time is an important variable here because the ecological threat of climate change is not likely to be addressed by traditional conservation strategies—it’s just too quick.

Instead, ecologists are discussing novel conservation strategies, including helping species navigate thought the highly fragmented landscape, needing to plan for parks and preserves to receive migrating species, and building short and long distance corridors to allow plants and animal species to move. For species unable to adapt fast enough, managed relocation, or the intentional act of moving species to location outside a known historical distribution for purpose of maintaining biological diversity, may be a species only option for survival. Some of these strategies may have significant ecological side effects, and we need to start balancing the risks of such actions against their potential benefits.

We can draw on discussion of these ecological management strategies to imagine new policy solution for human migration that goes beyond traditional approaches that prevent migration and, instead, move towards planned and channeled migration to maximize the benefits of migration (e.g., increasing livelihoods) while minimizing its costs and side effects. This will require, monitoring and mapping climate vulnerability of people and places, establishing corridor (physical and social economical) for migrants to safely reach their destination, and identifying and enhancing resilient communities that support diverse and vibrant communities in the face of rapid environmental and social change. Guided relocation of trapped populations—like managed relocation for non-human species--may become necessary, and soon.

Concluding remarks

Migration is an adaptive strategy for dealing with climate change, but it is not available to all. We expect that some population will be trapped and unable to move away from most vulnerable regions, and some populations will move move towards more vulnerable regions (e.g., toward coastal cities). While anticipating and planning for migration, we also need to to focus on improving the quality of life for people in situ, using a variety of strategies such a drought resistant crops, and implementation of climate resilient energy and transportation infrastructure.

We also must build a balanced portfolio of climate management strategies that includes both adaptation and mitigation of greenhouse gas emissions. It is our moral duty to stop climate change because it is the responsibility of the Catholic Church and all people of good will to address increasing vulnerabilities, particularly those that are aggravated by social and economic inequalities. Houses of worship are an important engine of social action that can effective communicate about climate science and climate impacts and lead to changes in life style and policy priorities. The most vulnerable among us are counting on it.

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