A Framework for Analyzing the Proximate Determinants of the Climate-Induced Mobility

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Extended Abstract

Abstract:

People don't migrate directly because of the global warming or sea level rise. People migrate affected by direct factors resulted from the global warming, sea level rise or other *higher-level factors* that form climate change globally. People migrate affected by *direct climate change variables* that are a result of the high-level climate change factors. So that, it's not logical or practical to attribute mobility to global warming directly. Humans migrate affected by direct damages or losses affects under which they can't continue their regular living including work due to direct climate change factors. In this short study, an attempt is made to introduce a conceptual framework for the analysis of the direct or what's I call "the proximate determinants of the climate-induced mobility," a framework that may be helpful in developing a set of factors/variables to ease the quantification of the influence of climate change on human mobility. The framework can also be used in developing and enhancing data collection tools to include questions that can be used to measure climate mobility in a quantitative and comparable manner.

Keywords: Climate change, migration, human mobility, climate-induced mobility, the proximate determinants.

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The Migration and Climate Change Nexus

What is climate change? Climate change refers to long-term shifts in temperature and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil, and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat, and raising temperatures (United Nations 2023).

Climate change affects people's lifestyles and often forces them to leave their usual places of residence and move to other areas, whether within the same country or crossing international borders towards other neighboring countries. Climate change also forces people to change their economic activities and daily lifestyles as a way of adaptation, perhaps also shifting to different economic sectors such as leaving the declining agricultural sector and shifting to other economic sectors such as services.

These climate-driven population movements have given rise to a new term in the field of migration studies called "climate migration." This term refers to the movement of people for reasons related to sudden or gradual change in the environment due to climate change. Climate migration is defined by the International Organization for Migration as "the movement of a person or groups of persons who, predominantly for reasons of sudden or progressive change in the environment due to climate change, are obliged to leave their habitual place of residence, or choose to do so, either temporarily or permanently, within a State or across an international border" (IOM 2019)

As for the impact of climate change on mobility, the World Bank's Groundswell report finds that climate change, could force 216 million people across six world regions to move within their own countries by 2050. By 2050, Sub-Saharan Africa could see as many as 86 million internal climate

migrants; East Asia and the Pacific, 49 million; South Asia, 40 million; North Africa, 19 million; Latin America, 17 million; and Eastern Europe and Central Asia, five million (World Bank 2021).

Between the global warming and climate-induced mobility is a full list of factors I call "The Proximate Determinants of Climate-Induced Mobility." Such factors are directly related to the decision of migration. In this essay I propose a full model that explains climate mobility that takes in consideration the direct factors that affect climate mobility which are affected by the high-level factors such as the global warming and see level rise.

The Indirect Determinants of Climate-Induced Mobility

The indirect determinants of climate-induced mobility are the general factors that cause climate change. Such factors don't have any direct change on human mobility. Though, they affect human mobility through their impact on the proximate determinants. The indirect determinants include an array of factors such as the following factors:

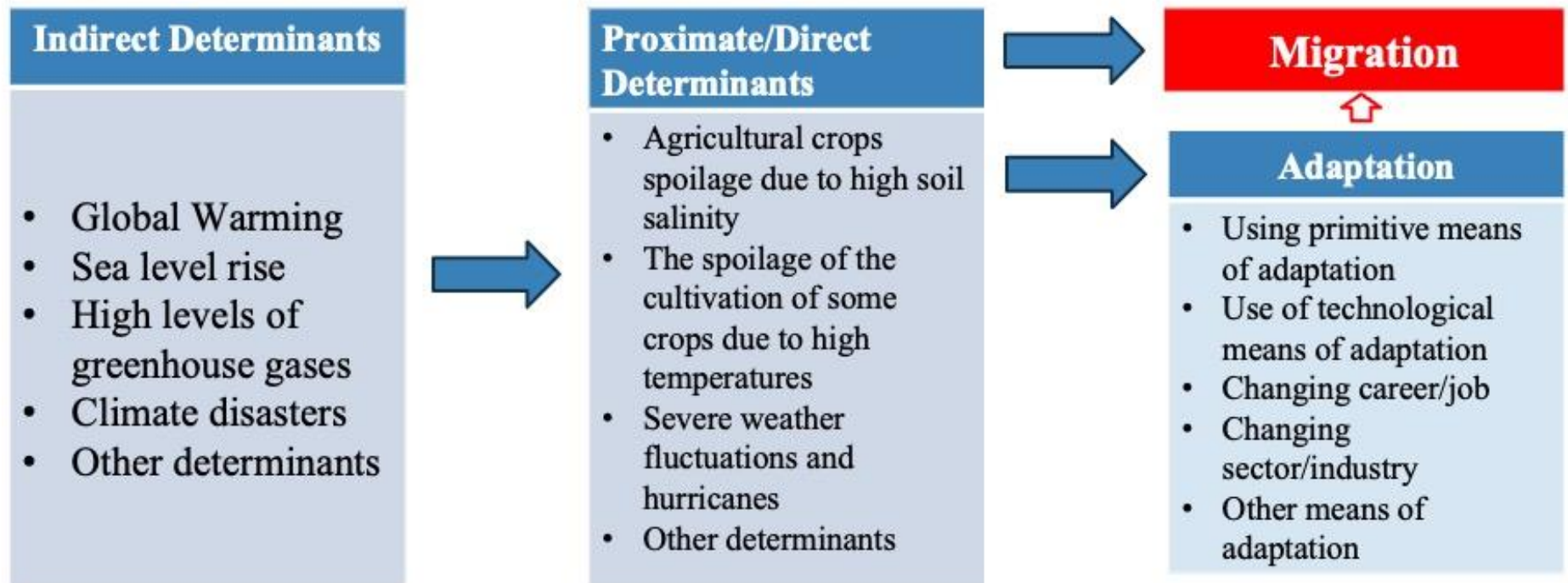## The Proximate Determinants of the Climate-Induced Mobility

I coined the term "the proximate determinants of climate-induced mobility" to illustrate the impact of climate change on human mobility and how the indirect climate change factors such as global warming can indirectly affect human mobility through direct variables such as, for example, soil salinization. The framework below was used to illustrate the relation between climate change and human mobility. As shown in the figure, indirect climate change factors affect direct climate change factors which directly affect the decision to adapt or migrate. The indirect determinants of climate induced human mobility are mainly global warming, sea level rise, high levels of greenhouse gases, and climate disasters. Such indirect determinants affect a set of proximate and direct determinants such as agricultural crops spoilage due to high soil salinity, spoilage of cultivation of some crops due to high temperature, severe weather fluctuations and hurricanes, and other determinants.

The proximate determinants may lead to two main outcomes: adaptation or migration. Adaptation may be practiced through an array of methods starting from using primitive methods such as moving soil from other places to the areas affected by sea water intrusion to keep the roots of the

plants away from the salinized underground water. More advanced technologies can be also used through implanting crops that are less affected by salinization. Residents who are affected by climate change proximate factors may even quit agriculture and work in different professions. When adaptation efforts fail, migration becomes the outcome. Internal migration is the most feasible type of mobility of climate-induced mobility. It's evident that the agricultural sector is the most affected sector by climate change.

A Framework for Analyzing the Proximate Determinants of the Climate Change Induced Mobility

Indirect Determinants

- Global Warming
- Sea level rise
- High levels of greenhouse gases
- Climate disasters
- Other determinants

Proximate/Direct Determinants

- Agricultural crops spoilage due to high soil salinity
- The spoilage of the cultivation of some crops due to high temperatures
- Severe weather fluctuations and hurricanes
- Other determinants

Migration

Adaptation

- Using primitive means of adaptation
- Use of technological means of adaptation
- Changing career/job
- Changing sector/industry
- Other means of adaptation

Recommendations for capturing climate-induced mobility factors

Capturing climate-induced mobility is not an easy task even under the proximate determinants approach illustrated above. This framework eases the process of quantifying and linking adaptation and migration to a set of specific and clear factors, but developing measures and asking questions is still not an easy task. However, one can propose an approach to measure climate induced labor mobility.

As mentioned above, the impact of climate change may appear in two forms: adaptation and migration. measures of such outcomes can be indirectly captured through questions related to the following factors:

1. Respondents may change their professions to work in fields that are less affected by climate change such as changing jobs from farming to providing semi-skilled services. It's important to capture change in professions and ask questions about the reasons of changing jobs in labor force sample surveys or in specialized migration surveys.

2. Another venue of measuring climate-induced mobility is to ask respondents about their current industry or sector as well as their previous industry. If respondents reported that they changed their industry, then we can inquire about the reasons for changing industry.

3. Another direct question can be asked to migrants about the reason for migration. Reasons for migration in internal migration surveys and censuses in Egypt are mainly (1) work, (2) marriage, or (3) study. It's important to add a new category which is influenced by climate change (using the proximate determinants listed above).

These are three main entry points to capturing the impact of climate change on human mobility. It's also important to include such questions in the panel surveys since they are more likely to capture the impact of climate change over time and for the same sample. Climate change variables can be also included, as a pilot, in the upcoming Egypt Household International Migration Survey (Egypt-HIMS).