

**SHALLOW WATERS: EXAMINING DISPLACEMENT, MIGRATION,
AND CLIMATE RESILIENCE AMONG URBAN-VILLAGE
COMMUNITIES IN BEED**

Alekha Choksey

Bombay International School, India

DOI: 10.46609/IJSSER.2023.v08i09.023 URL: <https://doi.org/10.46609/IJSSER.2023.v08i09.023>

Received: 12 September 2023 / Accepted: 23 September 2023 / Published: 28 September 2023

ABSTRACT

In 2020, 30.7 million people were internally displaced by disasters, over three times more than conflict and violence (9.8 million people). Of those displaced by disasters, 98 percent faced weather and climate hazards. Climate change exacerbates existing challenges and underlying vulnerabilities, forcing communities to face compounding crises. Local communities are at risk of being displaced because of the worsening drought, as well as water and food insecurity. These examples demonstrate that climate-related displacement can have devastating impacts. In some contexts, though, the adverse impacts of climate-related events can be avoided or mitigated, thanks to adaptation measures. This paper aims to analyse the relationship between climate change and human displacement, the factors that are causing it, and how climate change is causing displacement in different regions. The paper also takes special focus on the drought-affected region of Beed District which in recent times has been experiencing mass human migration. In the end, the paper talks about how anticipatory action can help mitigate the migration.

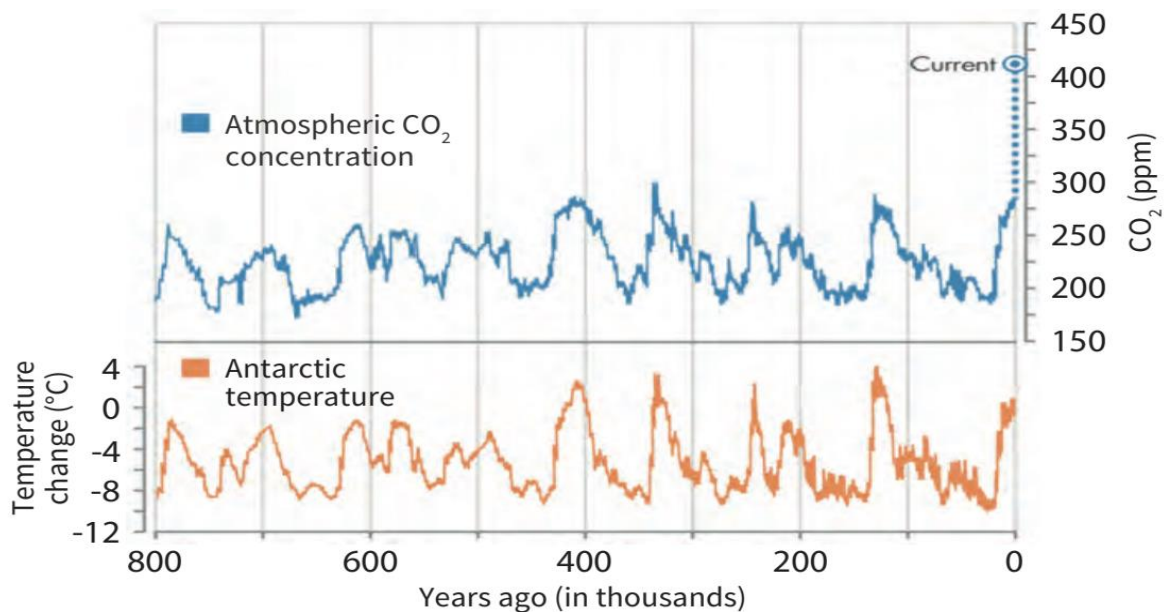
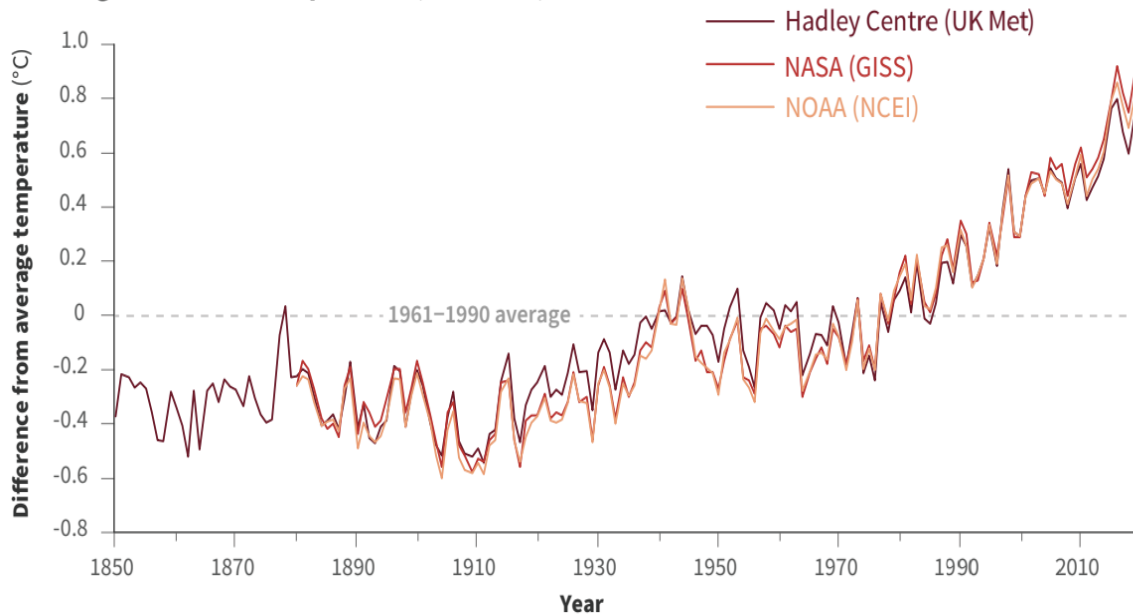
Keywords: Climate change, Human migration, Mobility, Temperatures

I. Introduction

The United Nations describes climate change as naturally occurring long-term changes in temperature and weather patterns due to changes in solar activity, large volcanic eruptions, or due to human causes. Since the 18th century, human activity has caused climate change, primarily through the burning of fossil fuels such as coal, oil and gas. To quantify: Since the start of the Industrial Revolution, CO₂ concentration in the atmosphere has increased by more than 40%, and more than half of this increase has occurred since 1970. The result is the warming of the oceans, a rise in sea levels, a sharp decline in Arctic Sea ice, a widespread increase in the

frequency and intensity of heat waves, and other related climate impacts. The figure below shows how the temperature has progressed relative to the baseline. (NOAA Climate.gov)

Annual global surface temperature (1850–2019)



The figure above (Shakun et al, 2007) shows that the present level of atmospheric CO₂ concentration is unprecedented in the 800,000 years.

All of this puts a strain on humanity. The global climate is warming, and more frequent and intense weather events are being observed around the world. Scientists typically label these weather events as "extreme" if they differ from 90% or 95% of similar weather events that have previously occurred in the same area. Sea levels have been rising, especially due to increased water volume from warming oceans, melting of mountain glaciers around the world, and massive losses from the Greenland and Antarctic ice sheets. The effects of sea-level rise are most clearly felt in the increased frequency and intensity of occasional storm surges. If CO₂ and other greenhouse gases continue to increase on current pathways, the sea level is projected to rise by at least an additional 1.3 to 2.6 ft (0.4 to 0.8 m) by 2100, which is expected to affect future ice sheets whose melting will be quite high. (Royal Society, 2020)

Global agriculture accounts for 30-40% of total greenhouse gas emissions. For this reason, rising temperatures have a significantly negative impact on crop growth, making it a major cause of global warming. (Mishra et al. 2021). Plant productivity will also be dramatically affected in the coming decades by variations in essential abiotic factors such as temperature, solar radiation, precipitation, and CO₂. Studies have shown that rising temperatures have a negative impact on wheat production, which in turn has a negative impact on crop productivity. After that, rice cultivation will be affected by high temperatures at night. These challenges will be exacerbated as temperatures continue to rise due to climate change. Another study conducted in China found that 4.6% of rice production per degree Celsius was associated with increased nighttime temperatures (Abbas et al., 2022).

Serious damage to human health is also expected. According to WHO, climate change could result in 250,000 new deaths per year between 2030 and 2050 (Watts et al. 2015). These deaths are attributed to extreme weather-related mortality and morbidity and the global spread of vector-borne diseases. In addition to the obvious massive impacts of climate change on health, forestry, agriculture, etc., it can also have psychological implications for people. Climate change will amplify levels of public anxiety, despair, and other problems, leading to a range of mental health problems. In addition, frequent exposure to extreme climatic hazards, such as geological disasters, also forms post-traumatic disorder, and its ubiquitous occurrence paves the way for the development of chronic mental dysfunction. (Abbas, 2022)

Another aspect of climate-related accidents is the increase in climate-related human migration. Mobility can be defined in terms of temporal (temporary, seasonal, and permanent) and spatial (short and long-range) duration. Seasonal movements may coincide with agricultural cycles and the associated fluctuations in labour demand. In the case of Sri Lanka, climate change is the underlying driver of human migration. Hydro-meteorological hazards such as floods and droughts, as well as long-term processes such as soil depletion, salinization, deforestation, and ecosystem degradation, affect the agricultural sector and other livelihoods and affect the existing

socio-economy, and may exacerbate public vulnerability. Water shortages and increased heat affect crop yields and livestock productivity, which in turn reduces incomes and traps farmers in poverty. In communities lacking economic diversification and employment opportunities beyond crops and livestock, this increases migration pressure, forcing farmers to leave their homes and head to cities, at least during the off-season. (Sylcan Trust, 2020)

Extreme events, changing weather conditions, melting glaciers, coastal flooding, and desertification interact with other factors that affect where and how people live. These stressors contribute to insecurity related to livelihoods, food systems, health, social stability, and other factors that are considered factors in migration, displacement, and planned resettlement. This article will focus solely on human migration caused by and potentially accelerated by climate change.

II. Background

According to Gemenne, every case of human migration depends on "the degree of voluntary or forced character of the migration", and "whether the migration should be temporary or permanent", It can be understood from the three criteria of whether or not it is Reactive or proactive?" Policy-driven human migration has historically been implemented in different settings and for different purposes (Mortreux et al., 2018). Climate change is expected to draw attention to planned resettlement as a viable coping strategy for people, communities, and nations. Despite these findings, there is a paucity of research on planned resettlement and a paucity of legal frameworks both nationally and internationally. There have been some developments in recent years, including UNHCR guidance on how to conduct planned resettlements with the participation of affected populations (Georgetown University and UNHCR, 2015).

The International Institute for Sustainable Development (IISD) report on human migration describes four potential patterns of climate-related migration that are of concern to Small Island Developing States (SIDS). Pattern 1 – talks about evacuation and return due to disasters, and how the frequency and magnitude of extreme weather events that threaten people's safety and well-being are destroying infrastructure and forcing people to relocate. This is a relatively short-term type of evacuation, and people will return when the situation returns to normal. Pattern 2 - talks about how weather-dependent livelihoods are deteriorating, which is causing movement leading to the search for alternative foods. The availability of alternative livelihoods and other coping capacities in affected areas is expected to influence the extent and modes of human migration. Pattern 3 – talks about how climate stressors interact with conflict to trigger larger-scale movements. Climate-related migration amplifies factors causing community unrest and reduces social cohesion, as competition for natural resources exacerbates pressures and heightens

tensions, which can interact with migration. You may lose your sexuality. Pattern 4 - talks about how long-term deterioration of local habitability can cause population displacement. Heatwaves, sea-level rise, salinization and flooding of coastal and deep aquifers and soils, desertification, and loss of geological water sources such as glaciers and freshwater aquifers affect many regions of the world, it can put pressure on the life-support ecosystems that support the human population.

The International Organization for Migration report on climate change and human migration analyses historical trends and future projections. Historical trends show that factors with adverse environmental impacts tend to have a greater impact on internal migration, especially rural-to-urban migration, than on international migration. Moreover, in agriculture-dependent counties (counties where climate change negatively impacts yields), rising temperatures and, to a less consistent degree, lack of rainfall have reduced domestic and international mobility through lower agricultural wages. In communities living in poverty, changes in adverse weather tend to have a weak or even negative impact on migration, as resource scarcity affects migration. Climate-related fast-acting disasters often cause short-term internal displacement. However, there is no uniform pattern for medium-to-long-term migration. There is no robust evidence for a consistent effect of climate-related disasters on cross-border mobility. The effects of climate-related factors on internal and international mobility, adding that estimated environmental impacts on migration tend to be strongest for Latin America and the Caribbean as well as Sub-Saharan Africa.

The report designed 2 sets of scenarios – namely Shared Socioeconomic Pathways (SSPs) which cover 5 alternative future demographic, economic, and social scenarios whilst the other is the Representative Concentration Pathways (RCPs) cover several future scenarios of greenhouse gas concentration. For example, SSP1-RCP2.6 corresponds to an average global warming of $\sim 1.9^{\circ}$ by 2081–2100. So, future projections state that Climate change-induced internal migration by 2050 in the six regions is estimated at 44–113 million people under SSP4–RCP2.6, 91–160 million people under SSP2–RCP8.5, and 125–216 million under SSP4–RCP8.5.

A report by CARE International, talks about how the glacier-fed rivers originating from the Himalayan Mountain ranges surrounding the Tibetan Plateau comprise the largest river run-off from any single location in the world. The rivers that flow through these mountains flow through some of the world's most populated areas. But under a scenario of rapid glacier melting, hundreds more water retention dams are likely to be built. Taken together, these will have significant impacts on downstream river systems and deltas already suffering from flooding and re-growing sediments. Evacuation and resettlement will be a major problem on a significant scale in these areas. The threat of migration from irrigated areas could become significant if runoff reductions become severe. Although it is difficult to predict the target areas, most

migrants and displaced persons will move to small and medium-sized cities inland, with a minority moving to larger cities along the coast and major tributaries of rivers (e.g., Delhi). Inland-to-coastal migration, a pattern prevailing in China since the early 1980s, puts more people at risk of sea-level rise and extreme flooding from upstream areas due to the regulatory effects of retreating glaciers. It will be, However, many cities in South Asia do not have the capacity to accommodate large immigration flows. It has the potential for significant water savings in irrigated areas in Asia and, if properly implemented, can prevent the displacement of farmers.

III. Discussion

To see the real impact of climate/climate change on people, let's take a look at the Beed district in Maharashtra. Beed district is one of the eight districts in the Marathwada region of Maharashtra. The region has an average rainfall of less than 600 mm, 30% less than the country as a whole. As such, it is prone to drought and is generally characterized by extreme drought, hot weather, and severe water shortages. The state has experienced recurring droughts, resulting in regular migration from the area. There have been five previous droughts, most recently in 2014-15 and 2015-16. The region recorded a 40% rainfall deficit in both 2014 and 2015. Precipitation forecasts for the near century (2015-2040), mid-century (2041-2070), and end-century (2071-2099) show a downward trend in precipitation in June, September, and October.

The Climate Resilience Project (CRP) aims to help victims of climate change facing forced migration, loss of livelihoods, informal employment contracts, and other socio-economic challenges. CRP conducted an ethnographic survey in Beed District to outline the problem and gain a basic understanding of it. The research focused on housing and resettlement, educational opportunities, the impact of climate change on livelihoods, and how communities came together to respond to crises. The respondents said that - drought has been exasperated by climate change as earlier they'd normally get 3 months of rain but over the last few years, there's been a change in pattern as a result of which crops die. The respondents also talk about the stark water crisis – they mentioned that earlier there would be 6 to 8 months of water shortage but now the shortage is yearlong as a result of which the use of water tankers has become the norm. The people on the bottom rung of the ladder of caste face even more difficulties as the tanker water would first go to those who are the supposed Upper Castes. Villages usually have one or two drilled wells that must be dug to depths of 700 to as much as 800 feet to find the water, which itself is undrinkable as it contains very high proportions of sedimentation. The occurrence of sediments in water has led to a prevalence of kidney-related complications because of which the region has been informally referred to as the Kidney Capital of Maharashtra. (Hindustan Times, 2016)

The study found an increase in suicide rates as a result of summer droughts. In the summer, farmers tend to turn to the informal credit market due to poor crops and commit suicide as a

result of pressure from loan sharks. Welfare systems exist, but victims cannot access such systems due to a lack of education. Families are under a lot of stress as they aren't able to generate income locally because of failing crops leaving them no choice but to migrate in search of work. Young Girls are also seen as a burden and are married off early (some at the age of 15). The respondents mentioned that it did not rain the past year as a result of which they lost 2 rounds of crops and also had to take more loans to feed their families and buy seeds.

When asked about their experiences living in cities after migration, respondents said they did not feel safe in cities and would stay within their groups for safety reasons. They have to leave their elderly and take their children with them. They live in makeshift tents near areas that have zero sanitation. There are no washroom facilities and open defecation is prevalent. Women have no access to sanitary napkins and are forced to work even during pregnancy. There is also a major hygiene crisis amongst women. They tend to control their food intake and defecate after sunset. It's dangerous at night, so it's common for women to plan ahead and form groups. Due to a deficit supply of water people usually go days without taking a bath and do not have access to clean drinking water. Kids have no schooling opportunities and accompany their parents to the fields as it isn't safe in the tents. They get hit by tractors/ bitten by snakes and scorpions and often fall into wells and water bodies. They fall sick due to poor water/ food and have no access to medical facilities. The Migrants are overworked and are also treated as untouchables and viewed with suspicion. One interviewee described an incident when a pregnant girl fell over with a heavy load and miscarried. The girl had no support system and even her husband left her. The group also responded that soon entire villages would be displaced due to water shortages and lack of agricultural productivity, leaving only those unable to work.

Manisha Ghule, founder of Nav Chetna, an NGO founded in 2008 and now active in Beed, said the organization wants to empower people and make them self-reliant. NGOs are trying to teach them how to run small businesses, such as running a small dairy farm. They buy cows, milk cows, and sell the milk. These earnings are used for daily expenses on groceries and medicines. They now run schools at the village level without government assistance and teach children whose parents have migrated.

IV. Conclusion

IOM and the FAO discuss how anticipatory government action can mitigate climate-related migration to some extent. Forward-looking action drives change in how partners and governments deal with foreseeable crises. Thanks to advances in technology, early warning information is more accurate and readily available than ever before. The report recommends that governments: 1. Conduct collaborative research and generate evidence 2. Develop integrated, context-specific early warning systems and proactive action triggers. 3. Pilot collaborative

approaches in selected countries to gather key insights on how positive action can be a solution to climate-related migration. 4. Promote broader collaboration and partnerships between governments and inter-governmental organizations.

The Paris Agreement provides a framework for the international community to assess the evolution of climate change and potential scenarios for its impacts on society, including scenarios that may involve human migration, including large-scale human migration over an extended period of time. provide a touchstone. This forward-looking perspective on climate governance creates value for the international community by focusing on risk management and a range of differentiated options and solutions for affected peoples and countries. At the grassroots, it is up to organizations like Nav Chetna to make a difference in the lives of climate change victims with government support.

Climate change-related human mobility – displacement from storms, the struggle for climate-proof livelihoods, or the search for habitable places when return to homelands isn't possible anymore – requires a new level of resilience to enable progress towards human well-being and climate-resilient sustainable development. With so many current challenges, countries struggle to keep up with the complexity of mobility today, let alone in the future as the full impacts of anthropogenic climate change unfold.

References

1. Abbass, K., Qasim, M.Z., & Song, H. (2022). A review of the global climate change impacts, adaptation, and sustainable mitigation measures. *Environ Sci Pollut Res* **29**, <https://doi.org/10.1007/s11356-022-19718-6>
2. Beyer, R., & Milan, A. (2023). Climate Change and Human Mobility: Quantitative Evidence on Global Historical Trends and Future Projections https://www.migrationdataportal.org/sites/g/files/tmzbd1251/files/2023-06/Final5_2023%20Climate%20Change%20and%20Human%20Mobility.pdf
3. CANSAs. (2021). *Climate-induced displacement and migration in India*. https://cansouthasia.net/wp-content/uploads/2021/02/Migration_India_20_02_2021.pdf
4. CARE International. (2009). *In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement*. https://www.care.org/wp-content/uploads/2020/05/CC-2009-CARE_In_Search_of_Shelter.pdf

5. FAO and IOM. (2023). *Climate-induced human mobility: How can anticipatory action play a role in Asia and the Pacific?*
<https://doi.org/10.4060/cc6742en>
6. Ferreira Fernandes, C.S., Loureiro, J. & Alves, F. (2023), "Research in environmentally induced human mobility: an analysis of methodological and theoretical dimensions", *International Journal of Climate Change Strategies and Management*, **15(1)**,
<https://doi.org/10.1108/IJCCSM-11-2022-0137>
7. Georgetown University & UNHCR. (2015). *Guidance on Protecting People from Disasters and Environmental Change through Planned Relocation*.
<https://www.unhcr.org/media/planned-relocation-guidance-october-2015>
8. Hindustan Times. (2016). *Kidney ailments plague water-scarce villages in Maha*.
<https://www.hindustantimes.com/mumbai/kidney-ailments-plague-water-scarce-villages-in-maha/story-SOqwWkPSpOpYGlwTcgOgYL.html>
9. International Institute on Sustainable Development (2022). *Human Mobility in the Context of SIDS and Climate Change: Pre-empting, Planning, and Contingency Arrangements for Adverse Climate Change Impacts*.
<https://sdg.iisd.org:443/commentary/guest-articles/human-mobility-in-the-context-of-sids-and-climate-change-pre-empting-planning-and-contingency-arrangements-for-adverse-climate-change-impacts/>
10. Mishra, A., Bruno, E., & Zilberman, D. (2021). Compound natural and human disasters: Managing drought and COVID-19 to sustain global agriculture and food sectors. *Science Total Environment* 754(14).
<https://doi.org/10.1016/j.scitotenv.2020.142210>
11. Mortreux, C., O'Neill, S., & Barnett, J. (2020). *Environ. Res. Lett.* 15(7)
DOI 10.1088/1748-9326/ab7834
12. Royal Society. (2020). *Climate Change Evidence & Causes*.
https://royalsociety.org/~media/royal_society_content/policy/projects/climate-evidence-causes/climate-change-evidence-causes.pdf
13. Sylcan Trust. (2020). *Climate Change and Human Mobility in Sri Lanka: Impacts and Actions Across Sectors*.
<https://environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/Working%20Paper%20Climate%20Change%20and%20Human%20Mobility%20in%20Sri%20Lanka.pdf>

14. Søderberg, N. (2019). Climate-Induced Human Mobility in Policy
<https://www.diva-portal.org/smash/get/diva2:1386929/FULLTEXT01.pdf>
15. United Nations. (n.d.). *What is climate change?* United Nations.
<https://www.un.org/en/climatechange/what-is-climate-change>
16. Watts, N., Adger, WN,. & Cooper, A. (2015). Health and climate change: policy responses to protect public health. *The Lancet* 386(10006)
[https://doi.org/10.1016/S0140-6736\(15\)60854-6](https://doi.org/10.1016/S0140-6736(15)60854-6)