Niger, 2014 ©Mercy Corps

ADDRESSING THE CLIMATE-CONFLICT NEXUS IN FRAGILE STATES:

Understanding the role of governance

NOVEMBER, 2020

Introduction

As climate change continues to affect the world, there is a growing body of evidence that changes in the environment are contributing to an increasing risk of conflict in fragile states.[1] Among states with large populations, politically excluded groups and low levels of human development, nearly one third of all conflicts over 1980-2016 have been preceded by climate-related disasters.[2] While the impact of climate change on stability is most devastating in such places, effective mitigation, adaptation and resilience strategies are largely missing, in part, because of our limited understanding of *how* climate change affects the risk of conflict and what can be done about it.

[1] USAID (2018) The intersection of global fragility and climate risks. link (last accessed October 8, 2020).
[2] Ide, T., Brzoska, M., Donges, J. F., & Schleussner, C. F. (2020). Multi-method evidence for when and how climate-related disasters contribute to armed conflict risk. *Global Environmental Change*, *62*, 102063.

> ***First, we find support for a link between higher temperature variability and greater violent conflict. Second, we observe a general trend whereby stronger state capacity appears, in some cases, to reduce the likelihood that climate variability will lead to conflict.***

The idea that climate change is leading to increased conflict has been gaining traction in recent years. Climate change is often described as a "threat multiplier," in that it does not directly cause conflict but can amplify it through several pathways.[3] The specific pathways, however, are less well understood. Researchers have proposed a number of hypotheses regarding the mechanisms through which climate change leads to conflicts, including the quality of governance and political institutions.[4] Yet, such hypotheses rest primarily on theoretical grounds and lack empirical testing, particularly at the sub-national level. We seek to help fill this evidence gap by conducting data analyses that examine the relationships between climate variability,[5] conflict, and governance over a seventeen year span in five countries in sub-Saharan Africa that have experienced violence or instability.

Despite variation across and within these countries, two key insights stand out. First, we find support for a link between higher temperature variability and greater violent conflict. Precipitation variability, however, shows results that are more mixed. Second, we observe a general trend whereby stronger state capacity appears, in some cases, to reduce the likelihood that climate variability will lead to conflict.

While context is critical, and the drivers of conflict are multi-faceted and complex, our evidence not only provides support to the argument that climate change compounds the risk of conflict in fragile states; it suggests that addressing governance weakness can help mitigate this challenge. Specifically, efforts that contribute to enhancing local state capacity may have the added advantage of reducing the likelihood that climate variability will increase violent conflict. Although improving governance has long been seen as an important factor in preventing various other forms of conflict[6], it has not been a central focus of investments and policies focused on addressing climate-related challenges.[7] Yet, our research suggests

---

[3] Buhaug, H. (2016). Climate change and conflict: taking stock. *Peace Economics, Peace Science and Public Policy*, *22*(4), 331-338;
Schleussner, C. F., Donges, J. F., Donner, R. V., & Schellnhuber, H. J. (2016). Armed-conflict risks enhanced by climate-related disasters in ethnically fractionalized countries. *Proceedings of the National Academy of Sciences*, *113*(33), 9216-9221;
Jones, B. T., Mattiacci, E., & Braumoeller, B. F. (2017). Food scarcity and state vulnerability: Unpacking the link between climate variability and violent unrest. *Journal of Peace Research*, *54*(3), 335-350;
Abrahams, D., & Carr, E. R. (2017). Understanding the connections between climate change and conflict: contributions from geography and political ecology. *Current Climate Change Reports*, *3*(4), 233-242;
Feitelson, E., & Tubi, A. (2017). A main driver or an intermediate variable? Climate change, water and security in the Middle East. *Global Environmental Change*, *44*, 39-48.

[4] Gizelis, T. I., & Wooden, A. E. (2010). Water resources, institutions, & intrastate conflict. *Political Geography*, *29*(8), 444-453;
Buhaung 2016;
Jones et al. 2017;
Van Baalen, S., & Mobjörk, M. (2018). Climate change and violent conflict in East Africa: integrating qualitative and quantitative research to probe the mechanisms. *International Studies Review*, *20*(4), 547-575.

[5] While the term "climate change" is used widely in the relevant literature, "climate variability" is a more nuanced and precise term for our discussion here. Climate variability refers to climatic variations and extreme weather events experienced over shorter periods of time (months or years), whereas climate change refers to the longer process experienced over decades and centuries.

[6] Mercy Corps. (2019). Good governance: preventing conflict & building peace.link (last accessed September 17, 2020).

[7] As an exception, some Natural Resource Management (NRM) programs focus on building local government capacity to dispute resource-based conflicts, but many focus on informal institutions.

that strengthening local governance may have a role to play in policies and programs aimed at promoting climate adaptation and security in fragile states.

Methodology

To better understand the relationship between climate variability, conflict and governance, this study drew on diverse secondary data sources[8] from five Sub-Saharan, African countries: Kenya, Nigeria, Uganda, Zimbabwe, and Mali. Using data on temperature and precipitation variability[9] over the years 2000-2017, we first tested if there was a link between these variables and the incidence of violent conflict within each country in our sample.[10] To understand how changes in temperature or precipitation variability affected conflict under varying conditions of governance, we interacted climate variability with two governance variables related to aspects of local state capacity: (1) *reach or penetration,* measured by the presence of a police station and a post office (as opposed to the presence of schools and hospitals, for example, which could have been built by external actors) and (2) *performance,* measured by perceptions of how well the local government handles corruption, as this offers an assessment of local governance quality, rather than perceptions of national-level governance.

Because climate events are generally considered exogenous[11] (i.e. they are not influenced by conflict or other factors in our model), we are able to understand how changes in the environment may affect conflict. However, there are important caveats to this approach, including the fact that the link between climate change and conflict is likely complex (e.g. non-linear), and as most research points out, indirect. Keeping in mind that our findings are, thus, indicative and not conclusive, the correlations (and the lack thereof) found in the analysis of these specific contexts can, nonetheless, contribute to better understanding the climate-conflict nexus, including the specific role that governance plays in it.

Key Findings

1. Higher temperature variability is associated with greater violent conflicts, whereas higher precipitation variability is mixed.

Consistent with our hypothesis and other research on climate change and conflict, in all countries, except Mali, we found some evidence of a relationship between climate variability and violent conflict for the observed years.

---

[8] For our climatic variables, we use daily temperature data from the European Centre for Medium-Range Weather Forecasts (ECMWF) ERA5 dataset, and precipitation data from the NCEP Daily Global Analyses of the U.S. National Oceanic and Atmospheric Administration (NOAA). We use daily temperature data to create mean values for each country per year, over 2000-2017. Conflict data is from the Armed Conflict Location and Event Data (ACLED) project, which collects dates, actors, locations, fatalities and modalities of all reported political violence and protests events across various regions. We restrict our analysis to violent conflicts (battles, violence against citizens, and remote violence), omitting protests, riots, and other non-violent events. Governance indicators are from Afrobarometer public opinion surveys for available years over 1999-2017.

[9] Most studies examining the relationship between climate changes to other factors use one of three approaches to measure climate change: rapid-onset disasters, temperature and precipitation-level change measures and temperature and precipitation variability and anomaly measures (Hoffman et. al, 2020). We use the latter because of our interest in slow onset effects of climate change, and because over a short period of time we expect to see more variation in temperature and precipitation variability than actual levels.

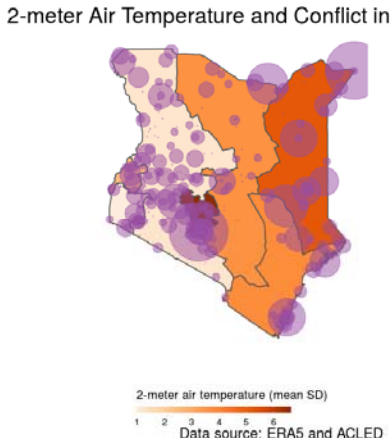
[10] We state that a relationship exists between our independent and dependent variables if there is a statistically significant relationship at a 5% significance level or lower in one or more of our models.

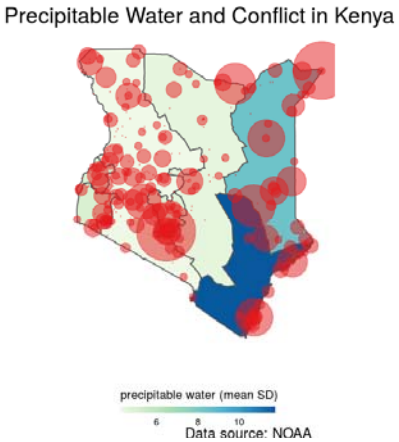
[11] A noted exception to this is when conflict affects the ability to gather reliable weather data as demonstrated by Schultz and Mankin (2019).

In Nigeria and Uganda, higher temperature variability is generally associated with more violent conflicts. The trend is also consistent for Kenya, but not statistically significant. In Zimbabwe, however, temperature variability does not seem to be a predictor of conflict.

When examining precipitation variability, more erratic rainfall is linked to a higher probability of conflict in Kenya and Zimbabwe. Surprisingly, the reverse is true in Nigeria and Uganda: more predictable rainfall is associated with more violent conflict. One possible explanation for this is that, in these contexts, greater precipitation variability could be indicative of increasing levels of rainfall, potentially alleviating drivers of conflict related to drought.[12]

Overall, our findings align with other research that has found, of common measures of climatic change, temperature variability has the biggest effect on conflict.[13]





2. Improvements in local state capacity may help mediate the link between climate variability and conflict.

In the majority of cases examined, an improvement in governance indicators appear to play an important mitigating role in the climate-conflict link.

Specifically, for Kenya, Uganda and Zimbabwe at least one of our two measures of local state capacity mediate the link between climate variability and violent conflict. In Kenya and Uganda, a greater local state presence is associated with a lower risk of climate change leading to conflict, while in Zimbabwe and Kenya, perceptions of improved performance in handling corruption appears to be important. A possible explanation for these findings is that, as environmental changes drive competition for limited resources, the presence of legitimate and trusted state institutions may help prevent or mediate disputes.

Overall, these results indicate that in Kenya, Uganda and Zimbabwe, where our analysis finds that climate change is linked to a greater risk of violent conflict, addressing weakness in governance may contribute to reducing this risk. Reliable and responsive local institutions could be vital to helping communities effectively manage the effects of climate change--e.g. food and water insecurity, displacement and increased poverty--so that they do not spark conflict.

---

[12] O'Loughlin et al. (2012). Climate variability and conflict risks in East Africa, 1990-2009. *Proceedings of the National Academy of the Sciences*. 109 (45) 18344-18349.

[13] Burke, M., Hsiang, S. M., and Miguel, E. (2015). Climate and Conflict. *Annual Review of Economics,* 7: 577-617.

3. Other salient drivers of conflict may obscure the link between climate variability and conflict in some areas. In short—context matters.

For Nigeria, despite the fact that temperature variability is associated with an increased risk of violent conflict, neither indicator of local state capacity had a significant mediating effect on this link. As such, while our findings suggests a general trend of improved governance mediating the climate-conflict link, this is not always the case. In specific contexts, other salient factors can both better explain the underlying causes of conflict and point to other solutions. For example, in Nigeria, our analysis shows that conflict tends to be strongly associated with specific regions (e.g. in the Northeast, in the Southern region, around the megacity Lagos, and dispersed across the Middle Belt.), indicating that conflict is localized and driven by diverse contextual factors. While strengthening local state capacity may be a critical factor in addressing some of these conflicts, for others, improving economic opportunities or addressing social cleavages may be, on their own, more critical.

Similarly, Mali is the only country in our analysis for which we did not find a link between climate variability and violent conflict, though some experts pointed to this possibility.[14] Rather, in Mali, most of the violent conflicts documented between 2010 and 2017 occur after 2012, the year of a military coup that led to a significant political upheaval, which continues to play out. The example of Mali, in this case, is an important reminder that other drivers of violent conflict —perhaps political, ideological, or ethnic—are at play, often operating against a backdrop of high climatic variability. Disentangling the lines of causality is a daunting task, and the precise mechanisms linking climate change and conflict are still being debated.

Policy Implications

> ***The capacity of states to prevent, mitigate and respond effectively to the social and economic challenges brought about by climate change may determine, in large part, whether violence occurs.***

This study aims to better understand under what conditions climate change may increase the risk of conflict. Our analysis provides support to the idea that climate change is not a direct cause of conflict, and that the quality of governance may influence the degree to which climate change may lead to conflict. In other words, "climate matters when it comes to war and peace, but the politics and policies surrounding climate matter even more"[15] The capacity of states to prevent, mitigate and respond effectively to the social and economic challenges brought about by climate change may, in large part, determine whether or not violence occurs.

---

[14] See for example: Arsenault, C. (2015). "Climate change, food shortages, and conflict in Mali." *Al Jazeera,* April 27, 2015. link (last accessed: Aug 10, 2020); Doucet, L. (2019). "The battle on the frontline of climate change in Mali." *BBC News,* Jan 22, 2019. link (last accessed: Aug 10, 2020); ICRC. (2019). "Mali-Niger: Climate change and conflict make an explosive mix in the Sahel." *International Committee of the Red Cross.* link (last accessed: Aug 10, 2020); Kalkavan, B. (2019). "The when and how of climate conflict: The case of Mali." *ECDPM Great Insights magazine, Autumn 2019: 8:4.* link (last accessed: Aug 10, 2020).

[15] Ghani, T. and Robert Malley (2020). "Climate change doesn't have to stoke conflict. Foreign Affairs. link (last accessed October 8, 2020)

To avert the risk of violence, this research suggests that strengthening local state capacity in areas faced with environmental risks could be an important part of the solution. Programming examples include those focused on building the capacity of local governments to monitor and resolve resource-based conflicts through establishing conflict and climate early warning systems and dispute resolution mechanisms. Despite the need for such initiatives, funding for climate adaptation rarely makes it outside of capitals, with only approximately 10% of climate finance reaching local levels[16] and such funding is disproportionately less for fragile states.[17] With COVID-19 and other acute crises demanding increasing resources, there is an urgent need for donors to think differently about climate adaptation funding. Investing more in strengthening local state capacity may help achieve multiple goals, including moderating the risk of climate change increasing conflict.

- **Donors should conduct or commission climate-conflict risk analyses to identify both the the root causes of conflict and how they interact with climate related factors.**
  While our research indicated that there are links between higher temperature variation and more violent conflict, the causes of conflict are highly localized and complex. More in-depth, sector neutral analysis that take into account the interaction between environmental factors, resource access and conflict within a specific context will reveal different pathways by which climate change may amplify conflict, or other factors that may be more important.

- **Donors should explore investing in strengthening local governance as part of climate adaptation programs in fragile states.**
  When designing approaches to mitigate conflict, donors and implementers commonly look to governance programs. However, governance programs are often not considered part of the menu of solutions related to climate change. In places where environmental factors are exacerbating conflict, donors and partners ought to consider investing in governance programs that strengthen local state capacity to address the new challenges brought about by climate change. Our research suggests that enhancing local presence to provide services like security and minimizing mismanagement and corruption are important indicators of improved state capacity that can help address these challenges.

[16] Shakya, C. and Marek Soanes (2019). “Breaking barriers to local climate finance for the triple win.” *International Institute for Environment and Development.* link (last accessed October 8, 2020).
[17] Alcayna, T. (2020). “At what cost: how chronic gaps in adaptation finance expose the world’s poorest people to climate chaos.” *Flood Resilience Alliance.* link (last accessed October 8, 2020).

Acknowledgements

This report drew on analysis conducted by the Spring, 2020 Harris Team Policy Lab at the University of Chicago. Under the guidance of Dr. Rebecca Wolfe, the research team was composed of Jacob Bul, Manuel Bustamante, Laura Keen, Zhaoyin Liu, Susan Paykin, and Borui Sun. We are grateful for their excellent work.

Suggested Citation: Jene, Lisa and Beza Tesfaye (2020). Addressing the Climate-Conflict Nexus in Fragile States: Understanding the Role of Governance. Mercy Corps.

CONTACT

BEZA TESFAYE
Director of Research – Climate Change and Migration
btesfaye@mercycorps.org

ELIOT LEVINE
Director – Environment Technical Support Unit
elevine@mercycorps.org

SELENA VICTOR
Senior Director –Policy and Advocacy
svictor@mercycorps.org

About Mercy Corps
Mercy Corps is a leading global organization powered by the belief that a better world is possible. In disaster, in hardship, in more than 40 countries around the world, we partner to put bold solutions into action — helping people triumph over adversity and build stronger communities from within.
Now, and for the future.

45 SW Ankeny Street
Portland, Oregon 97204
888.842.0842
mercycorps.org