

Climate Change and Pastoral Conflict: A Focus on the Karamoja Cluster of Ethiopia, Kenya, and Uganda

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Editorial information

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Introduction

Can environmental indicators of resource scarcity provide effective early warning of pastoral conflict? Despite a plethora of early warning indicators and models of how environmental factors affect the onset of civil wars, similar models focusing on environmental drivers of pastoral conflict are generally not as robust.¹ The claimed causal links between the environment and pastoral conflicts have not been tested as rigorously or as often as models focusing on the relationship between environmental resources and civil wars. A key reason for this disparity is a data gap.

It is intuitively understood that pastoral systems and the environment are intimately linked. Pastoral systems are, in essence, complex forms of natural resource management, which operate by defining how individuals should interact with the ecosystem, the social system, and the geopolitical system.² These interactions occur at multiple places, times due to several factors.

Pastoral conflict is primarily studied through qualitative methods. Regardless of how convincing and confirming intuition is, this approach has resulted in limited quantitative evidence on these conflicts.³ Scholars suggest that environmental resource scarcity leads to violent pastoral conflict because of competition for land and control of water points.⁴ This and other studies are descriptive, without incorporating larger quantitative data collection and analysis.⁵ As an implication, conflict and environment early warning systems that collect sub-national event data have limited academic analysis of what environmental indicators are predictive and causally linked to pastoral conflict.

The Conflict Early Warning and Response Mechanism (CEWARN) in the Horn an initiative of the Intergovernmental Authority on Development (IGAD), is arguably an exception in terms of the dearth of quantitative data for casual analysis. CEWARN employs field monitors to collect incident and situation reports, which provide the empirical underpinnings for the connection between environmental resources and pastoral conflicts. A number of its operational methods and tools include the CEWARN Reporter, a bespoke software tool that enables tracking, categorisation, and analysis of large volumes of conflict early warning data from all seven IGAD member states. With the data, CEWARN officers can analyse and identify the signs of pastoral conflicts vis-à-vis a robust set of data points.

This article focuses on geolocated behavioural data collected by CEWARN in the Karamoja Cluster. This includes, for example, behavioural data such as

anger, vengeance, and frustration that is combined with three types of environmental resource data—precipitation, vegetation, and forage (food such as grass or hay for horses and cattle). The latter is collected from the Climate Prediction Center (CPC), based in the United States, and the Livestock Early Warning System (LEWS), based in Kenya. Analysis of the data demonstrates how environmental resource data can provide early warning of pastoral conflict and support early response.

Data Description

Since July 2003, CEWARN field monitors have been collecting data in 12 reporting locations along the borders of Ethiopia, Kenya, South Sudan, and Uganda (the Karamoja Cluster), which has now increased to a total of 16 reporting locations.⁶ The monitors have been documenting episodes of armed clashes, organised raids, and banditry. Using this data, they have developed weekly situation reports on indicators of pastoral conflict behaviour in the Karamoja Cluster. In addition to regular situation reports, episodic reports of select incidents are also recorded to document specific violent pastoral conflict events. Incident reports document armed clashes, organised raids, and crimes such as assaults and banditry. This includes data on who did what to whom, where, when and how, as well as data on human deaths and livestock losses.

Field monitors provide CEWARN with timely and consistent observational information on indicators of pastoral conflict behaviour. The situation reports are standardised reports that include information on how pastoral livelihoods change over time by identifying situations that the field monitor believes increases or decreases the likelihood of violent pastoral behaviour. Parallel to collecting data on indicators of conflict situations, CEWARN field monitors also track cooperation among pastoralists in the region. Specifically, there are four clusters of positive polarity variables, including: alliances, exchanges, mitigations, and initiatives.

Documented incidents are linked to preceding situation reports that track context changes. These changes are then monitored to help prevent or mitigate future incidents. The data that the field monitors collect is shared with country coordinators, who code and analyse the data to identify a probability of violent conflict among pastoralist communities. The situation report includes 51 questions identified by local area experts as the most important precursors and mitigating factors of pastoral conflict. Questions are grouped into seven clusters that address: 1)

communal relations; 2) civil society activities; 3) economic activity; 4) governance and media; 5) natural resources; 6) safety and security; and 7) social services. The questions are answered through a scale-positive (peaceful) to negative (possible conflict) arranged into an index and presented as scores that indicate negative situations and conflict or positive situations and cooperation.

The study upon which this article is based focuses on three conflict scores that significantly impact pastoralist conflicts, including:

- Aggravating behaviour: behaviours expected to exacerbate tensions among pastoral communities, such as pastoral migration and drought
- Provocative behaviour: behaviours expected to incite reactions from other groups such as the unusual movement of all-male groups and the conduct of pre-raid blessings
- Environmental pressure: documents situations such as natural disasters, land competition, more livestock in secure areas, grazing area abandonment, and livestock disease

Scope of the Study

The study conducted a linear regression analysis to identify dependent and independent factors or variables. A linear regression analysis is a statistical model that estimates the relationship between dependent and independent variables. Between January 2018 and December 2019, CEWARN data includes more than 1,500 situation reports and 1,000 incident reports from 6 locations in the Karamoja Cluster, including: the Southern Nation Nationalities and Peoples (SNNP) region in Ethiopia; Rift Valley Province (RVP) in Kenya; and Kaabong (KAP), Kotido (KOT), Moroto (MOR) and Nakapiripirit (NAK) in Uganda.

From the incident reports, the analysis uses data of the number of human deaths, the number of livestock losses, and the incidence of organised raids. The first two measures characterise the intensity of the incidents, while the number of raids captures the actual incidence. Additionally, precipitation influences the availability of forage or fodder for livestock, but this is an indirect measure. The availability of forage, and thus pasture for grazing, depends on several other factors such as land use and type of plant species and soil. The study complements the precipitation or rainfall data with forage estimates for the Horn produced by the LEWS. It also uses lower-level administrative units (for example, counties or provinces) as the focal point of data generation and analysis.

Data Analysis and Key Findings

By conducting a regression analysis, it is possible to identify specific variables (the dependent variables) that influence pastoral conflict (the independent variable). What the regression shows is that the incidence of organised raids is associated with: historical factors such as previous conflicts, revenge, and intra-ethnic tension; cultural factors such as marriage seasons and dowry expectations; socioeconomic factors such as poverty, population growth, loss of herding lands to farmers, unemployment, ranching; and environmental factors such as vegetation, forage, pastureland, and rainfall. This indicates that cultural factors mix with socioeconomic factors and histories of relationships to create and exacerbate (or ameliorate) these inter-community agro-pastoral conflicts.

Past conflict leads to new conflict through revenge and retribution. The data shows that a higher incidence of death, for example, contributes to the intensity of future raids. Even with these findings, the data is challenged, however. The raw data on these variables reveals wild fluctuations and leads to improbable estimates. CEWARN has made a positive step by implementing a quality control programme to identify these potential errors immediately after their submission rather than later, sometimes months after the incidents. In addition, while CEWARN data is strong in many places, the lack of other variables constricts analysis. Except for the environmental variables, the present study does not account for structural attributes, given its focus on observed behaviours. Again, CEWARN is aware of the need to formally incorporate structural factors into its ongoing analyses. Toward this end, CEWARN has developed a protocol to collect relevant structural data such as on land mines, smuggling and illegal trade, nomadic movements, refugees, and banditry.⁷

This analysis shows that the incidence of organised raids is the most reliable indicator of levels of pastoral conflict. In addition to organised raids, four environmental factors are significant in the data analysis: vegetation, forage, pastureland, and rainfall. Other factors that have insignificant factor include human death and livestock loss.

As would be expected of peace indicators, reciprocal exchanges and peace initiatives are negatively related to the incidence of raids in a very sharp way. More interestingly, another peace indicator, mitigation, presents a positive relationship with raids. Mitigation acts include reporting small arms and confiscation, positive media coverage, and

stability in dowry prices. Indeed, one CEWARN gathers information from security forces, including the police. This may reveal that attempts to mitigate hostile situations associated with raids often take place during the raiding activity. Thus, the joint reporting of raiding activity and efforts to mitigate the situation is expected, with more intense raiding activity leading to more intense efforts to mitigate.

Among the conflict indicators, aggravating behaviour is positively associated with the incidence of raids at a statistically significant level. This is understandable, but it also begs the question of why the other two conflict indicators are not significant. These indicators are provocative behaviour (such as the unusual movement of all-male groups and pre-raid blessings) and environmental pressure (natural disasters, land competition, and livestock disease included). Perhaps the explicit provocations as conveyed in the current situation report questions may be somewhat ambiguous. In terms of the situation report questions on environmental pressures, these were originally included as a proxy for a more systematic inclusion of direct environmental measures. Now that CEWARN is including direct measures, it is likely that these indirect measures (such as rainfall, vegetation, and forage) are no longer useful. CEWARN has already embarked on an effort to review all the situation report questions to refine them for improved precision concerning the phenomena that they intend to capture and to minimise ambiguity. Renewed emphasis on regular training for field monitors is also underway, which should improve the quality of future data.

The environmental factor of vegetation levels also presents a positive relationship with the incidence of raids. This direct environmental measure suggests that raiding behaviour is strategically planned and tied to opportunities presented by the environment. Various clans seek grazing for their animals. Where there is grazing, they come into contact with one another, increasing the possibility for conflict and opportunistic raiding. It is well known that when pastoralists move from one grazing area to another location, they often try to steal a few animals before departing, which may lead to conflict. This does not necessarily suppose planning unless these raids are directly a result of blessings, which do indicate planning. As Turner argues, conflicts are less frequent during natural disasters such as drought since raiders do not have adequate water supplies for stolen cattle; instead, they tend to wait for rainy seasons.⁸ In the case of pastoral conflict, these strategic interests must, in part, be tied to tactics aligned with the environment.

High vegetation represents high grass and dense bush cover, which makes it easier to track and ambush cattle with minimal risk of being caught. As herders interviewed during related field research explain, "Raiders like to attack during wet years because of high grass, strong animals, dense bush to hide in, and the availability of surface water, which makes it easier to trek with the animals."⁹ At times, the variability in vegetation may coincide with cultural practices. Anthropological studies show that raids often take place as revenge for previous attacks. Revenge activities are not, however, supposed to coincide with religious ceremonies, which take place during specific periods corresponding to the lunar cycle, irrespective of rainfall. Nonetheless, a slight increase in violence is said to take place after age-set ceremonies, during which groups of warriors are initiated or ritual leaders installed.¹⁰

Rainfall is an indirect factor for pastoral conflict assessment measures. The availability of surface water is a function of rainfall as well as other influences such as ground cover, topography, and land use. Rainfall is not independent factor rather it calculated with other factors such as pastureland, high vegetation and forage.

The forage measure that the study uses is calculated from a model that incorporates other environmental influences. Measurement error, as well as how the study had to transform the forage unit (pastureland of the cattle) and level of analysis, may very well have contributed to the lack of statistical significance for this particular measure. Advanced software systems may, however, address the constraints of data analysis.

Another solution may be found in regional practices. Pastoralists usually plan their raids and attacks carefully to achieve surprise, and they use traditional methods of surveillance to identify targets.¹¹ It may be that rainfall and forage are important elements in this planning, but depending on the local circumstances, these factors may serve to increase or decrease the incidence of raids. Tracking stolen cattle during droughts is virtually impossible since there is no water and pastureland for the survival of the cattle. Therefore, there is still a significant and feasible relationship between rainfall and forage vis-à-vis pastoral conflict, even though the statistical figures do not show this.

Conclusion and Recommendation

Using field data from the Karamoja Cluster, the study shows that at least one environmental element (vegetation) is positively associated with the incidence of organised raids at a statistically significant level. Two behavioural indicators—aggravating actions and mitigation efforts—are also positively associated. More interestingly, mitigation (a peace indicator) presents a positive relationship with raiding. This may simply reveal that attempts to mitigate hostile situations associated with raids often take place during the raiding activity. Thus, the joint reporting of raiding activity and efforts to mitigate the situation are to be expected, with more intense raiding activity leading to more intense efforts to mitigate. In contrast, reciprocal exchanges and peace initiatives are negatively associated with raiding. In other words, organised raids are more likely when aggravating behaviour and vegetation are high, and reciprocal exchanges and peace initiatives are low.

The assessment of the behavioural data leads to recommendations that refinements in the situation report questions, integration of structural attribute indicators, improvements in quality control, and more regular training are likely to increase the potential explanatory power of CEWARN early warning efforts. The quality of the field data is one of the obstacles to understanding the relationships between behaviour, the environment, and conflict. Synchronising the CEWARN data over time and the geographical units of analysis with that of the environmental data was a major task in this study. Field monitor assessments may have introduced an error. Future studies of the CEWARN data would benefit from a qualitative analysis. Indeed, the study findings confirm that “when there is no underlying time series, we find it difficult to place great confidence in aggregate numbers”.¹²

Environmental factors do appear to influence pastoral conflict when a community engage in raids activity. Turner, however, suggests that resources need to be of sufficient density and persistence to elicit competitive behaviour—behaviour that has

costs and risks.¹³ Thus, indirect measures such as rainfall, forage, and complex influences may obscure the relationship between environment and pastoral conflict. This study shows that resource depletion and cattle raiding may be important in sustaining raiding behaviour, given the association between vegetation and raids.

An issue deserving more attention centres on the entry points for conflict prevention. Preventative factors such as peacebuilding, anticorruption initiatives, or civil society engagements need to be considered.¹⁴ A broad inclusion of policy and institutional reforms is needed, especially as they are related to possible response mechanisms. Peace education, disarmament, demobilisation, and reintegration (DDR), peace movements, curbing youth unemployment, and promoting traditional means of conflict resolution may be useful as they can have a pervasive impact in the Horn.

CEWARN may also wish to build its capacity to improve organisational abilities to carry out reliable early warning analysis on time. It is expected that the organisation could serve as a model for reflecting the impact of climate change on pastoral societies worldwide. Thus, this study recommends closer institutional collaboration in data sharing and capacity building between CEWARN, the Climate Prediction and Assessment Centre (also an IGAD initiative), and LEWS, which should endeavour to take their current relationships to another level. In addition, this collaboration should not be limited to early warning only, but should also include early response to conflict. Integrating conflict and disaster warning systems for early response reflects a wider recognition that complex emergencies are only going to become more prevalent with the impact of climate change.

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