

Outcomes of Climate Change in a Marginalized Population: An Ethnography on the Turkana Pastoralists in Kenya

To its inhabitants, Turkana was once a land of abundance. This vital terrain was generous to its occupants 40 years ago; unfortunately, this setting has changed significantly. The climate has changed, and as a result, life has changed as well. Food insecurity, water scarcity, altered disease patterns, extreme weather events, displacement of communities, migration, population growth, and human conflict are among the previously reported effects of climate change on human health that we have witnessed and community members have shared.^{1,2} Some of these issues have surfaced in most of the northern part of Kenya and are currently being experienced by the Turkana community.³⁻⁵ Evidence supports the notion that underresourced communities, like pastoralists with limited livelihood alternatives, experience climate change disproportionately.² This editorial reflects on our six-week period of data collection in Turkana County, Kenya.

PASTORALISM AND INCREASED CLIMATE VARIABILITY

Land availability, adequate and predictable rainfall, and a nomadic lifestyle enabled the Turkana

people to sustain large herds of livestock.^{3,4} Many pastoralist communities throughout Africa, who have historically relied entirely on livestock for survival, are now vulnerable. Adverse effects of climate variation and change have severely affected the Turkana people, who are pastoralists native to the arid and semi-arid lands of northwestern Kenya.^{4,5} The Turkana inhabitants have experienced decreased rainfall, increased bouts of dry spells, and inadequate animal nutrition because of unavailable water and grass. These outcomes are partly caused by climate changes that have caused or have been associated with dwindling pastures, reduced water sources, and limited land use options. It was clear to us, as we moved through this northern frontier, that these changes left an indelible impact on the Turkana, their land, and their cattle. The ground was parched, with little evidence of water sources for miles, and the animals looked strained and thin. Most community members, although putting up a brave fight as they walked miles in search of water, seemed weary and tired. They mentioned that the search for water would involve 4.5-hour treks a day in a climate that averages 90°F. During dry spells, residents have to dig deep wells,

deeper than in the past, on the dry river beds to access water for human and livestock consumption; this situation places physical and mental difficulties on the affected populations. Unfortunately, this setting is mostly the result of climate changes that promote drought-like conditions.

CHANGING FACE OF CONFLICT

Turkana nomads have reconceptualized land use and distribution, as have other cultural groups of pastoralist communities in the region. Access and the power to negotiate access to resources have been severely hampered. This has resulted in exacerbation of hitherto low-level endemic conflict that would normally exist between the West Pokot and Samburu of Kenya, the Karamajong of Uganda, the Toposa of South Sudan, and the

Merille of Ethiopia. Although historically viewed as a cultural practice, cattle raids among pastoralist communities are now highly fueled by desperate attempts to sustain dwindling stocks and competition over limited water and pasture, often sparked by migration beyond their territory; moreover, the raids have also taken a commercial angle, making it impossible to recover lost stock. From our interaction with and observation of the community, we believe that the consequences of conflicts have increased dramatically with the advent of high-powered weapons and the shifting local and regional geopolitics, which results in a greater loss of life, loss of livelihoods, loss of identity and self-worth, forced displacement, decreased access to health care services, and palpable grief among the pastoralists. These factors have decreased social cohesion and resilience of the community while increasing the vulnerability of families.⁴

ALTERNATIVE SOURCES OF LIVELIHOOD

The changing climate patterns and dwindling livestock numbers

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have pushed the Turkana to consider alternative sources of livelihood, such as firewood and charcoal burning, the sale of local brew, and fishing. Unfortunately, these newly adopted economic means have detrimental effects on both the community and surrounding environment. For instance, firewood and charcoal burning are the primary source of fuel for inhabitants of the Kakuma refugee camp and urban centers within and beyond Turkana County. Although selling charcoal meets a short-term need as a source of income, the resulting deforestation and long-term impact on persistent drought and environmental degradation will ultimately contribute to increased food insecurity, loss of ecosystem services, and increased vulnerability of this population.¹ In addition, exposure to particulate matter from the use of solid fuels has been linked to adverse health outcomes, such as increased pneumonia-related mortality and morbidity in children younger than five years.⁶

The sale of local home brew is also a growing source of income. Decreasing animal herds have led to what community members refer to as “idleness” and a “state of despair,” which leads to an increase in demand for the local alcoholic grain-based brew called *chang'aa*. Some residents have recognized and will often refer to the link among increased HIV prevalence, excessive alcohol consumption, and increased risky sexual behaviors in the area.⁷ Similar to other communities affected by climate change, susceptibility to addiction, anxiety, and emotional distress caused by their reduced resilience is also on the increase.^{1,3,7}

Another outcome of decreased revenue from animal husbandry is an increase in

fishing. Locals refer to Lake Turkana as a “free garden” from which anyone can earn a living. Unfortunately, fishing as an alternative source of livelihood is fraught with its own challenges. Most pressing is the diminishing number of fish, which is a result of overfishing and receding water levels. The lake has become a competitive resource between Turkana and other pastoralist communities. Conflict between Turkana fishermen and the Merille from Ethiopia has also increased. Thus, fishing is an unsustainable solution for the surrounding populations who are trying to make a living.

CONCLUSIONS

Based on our observations, Turkana pastoralists have disproportionately absorbed the impact of climate change. The community now faces the abandonment of livelihood practices that hold deep cultural meaning. The alternative survival strategies explored by the community are not viable in generating adequate revenue, nor are they sustainable because of the shifting conditions and availability of natural resources. Without sources of livelihoods, the Turkana will continue to experience the effects of persistent drought and unpredictable rainfall. In addition, we identified some indirect effects of climate change that affected the Turkana, but might also be affecting other pastoralist tribes around the world. These include conflict, rural–urban migration, the health impacts of food insecurity, and psychological trauma related to the disintegration of cultural identity and the loss of human lives during conflicts. Although this situation is urgent, the Turkana people press on with the

hope that their land, which once was a haven of abundance, will sustain them and the generations to come. Future research should continue to address shortcomings experienced by pastoralist populations alongside the development and adaptation of strategies that ensure sustainable alternative livelihoods. **AJPH**

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M. W. Mahero and J. M. Waila equally contributed to the development of the editorial. J. M. Waila also served as project manager, contributed to development of the research protocol, designed the data collection tool, participated in data collection and analysis, and wrote the first draft. M. W. Mahero wrote and provided edits to the editorial and was also involved in data collection and analysis. Both S. Namusisi and S. J. Hoffman were key personnel on the study, participated in data collection and analysis, and contributed to development and editing of the article. C. Robertson was the principal investigator of the study. She originated the project and supervised the team, provided quality control, and directed development of and edits to the editorial.

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HUMAN PARTICIPANT PROTECTION

This study was approved by the University of Minnesota institutional review board and the Kenyatta National Hospital–University of Nairobi Ethics and Research Committee, approval number P718/11/2015. Informed consent was obtained from all study participants.

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