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**Climate Change, Environmental Scarcity, and Violent Conflict;  
Examining Primers and Analyses  
Katie Wolt, December 6, 2011**

The impacts of climate change on resource availability are becoming increasingly evident. The world's human population has reached 7 billion people, and will continue to increase exponentially into the latter part of the century. The world faces a complex political and cultural dynamic that depends upon wise resource use and distribution to maintain social stability. However, trends show deepening economic divisions as former industrial powers become stagnant and emerging democracies and economies take hold in the global marketplace. As industry and resource use increase globally, the effects of global climate change begin to have significant social impacts, particularly in regions with existing insecurities. The effects of climate change can become an impetus for violent conflict in regions with weak states, pronounced migration, and a lack of access to resources. The system of interconnected factors which primes regions for civil strife have divided researchers on the role that global climate change may have on sparking violent conflict. In examining these academic discussions, we are able to analyze the impact that ignoring climate change while mitigating conflict will have on vulnerable populations in the Global South. By acknowledging and examining the many factors that institute violent conflict in the face of global climate change, researchers and states may prevent or lessen the impacts of future violent conflict in regions facing environmental scarcity.

The complex nature of civil strife is difficult to dissect. As researchers unpack the motivating factors for violent conflict, they are faced with a system of parts that are regionally specific. Historical context is not able to be used effectively in an increasingly globalized world that is consuming information and resources quicker than any previous generation (Homer-Dixon 27). Efforts to predict violent conflict often take the form of "primers;" a primer may be defined as a factor that creates an atmosphere or motivation for violent conflict or major societal change. Primers can indicate civil strife and can take many forms. In order to stratify motivating factors, primers presented in this paper will be identified as either "social" or "environmental"; specifically, weak states, migration, and resource access will be discussed at length. Each one of these social primers for violent conflict is amplified by environmental primers, such as precipitation or temperature fluctuations, which are dramatically affected by climate change. As the effects of anthropogenic climate change become more evident, environmental primers play a much greater role in strengthening social primers for violent conflict.

The relationship between human vulnerability, environmental change, and violent conflict must be viewed through multiple lenses. Researchers attempting to mitigate civil strife before it occurs often look to existing social structures and primers as evidence for future conflict. Violent conflict can be triggered by primers which have previously been dormant; weak states and economies, resource scarcity, and migration are frequently cited as preexisting conditions that can spark civil strife (Bell 5). As the effects of global climate change become pronounced, preexisting dormant motivators for social unrest may be brought to life, resulting in violent conflict. Emerging social trends may interact with climate-induced environmental scarcity as a “threat multiplier” for civil strife (Brown 42). In examining three major social primers for conflict, we may determine how climate-induced environmental changes encourages further social instability.

Resource scarcity or accessibility is often cited as a priming factor for violent conflict. As climate change dramatically alters landscapes that formerly supported human populations and their economies, resource availability will become a significant challenge. The World Development Report for 2011 shows that global demand will outstrip supply for food, land water, and oil by 2025 globally (Evans 3). An increase in average global temperatures of 2° Celsius is predicted to dramatically decrease global crop production, exposing “tens to hundreds of millions more people to the risk of hunger” (4). States that rely upon existing frameworks of oppression may shift resources towards elites or the state, priming its citizenry for violence (Homer-Dixon 9-10). Regions facing severe drought and loss of agricultural subsistence are more prone to violence and strife, particularly those in existing weak states.

The weak state remains a critical basis for violent conflict. As a state loses strength, its capacity or willingness to provide basic needs to its populations greatly decreases. In addition, states are unable to mitigate the direct effects of climate change as their capacity for organization and action weakens (Barnett 643). Sub-Saharan Africa is considered to be a vulnerable region for climate related social upheaval, due to the “low adaptive capacity” for environmental and social change, as well as its propensity towards extreme temperature increases due to climate change (Evans 4). Case studies of the West African drought of the late 1980s show that stable nations like Senegal mitigated their agricultural resource loss peacefully. However, states that had existing vulnerabilities, such as Liberia and Sierra Leone, succumbed to civil war and citizen death, even though environmental impacts were no greater for Senegal (Bell 17). The strong Senegalese state absorbed the impacts of crop loss while weak states in the region could not overcome the dramatic environmental and social changes brought on by the drought.

Concentrated migration can prime communities for violent conflict as ethnic tensions and unsustainable population growth creates tense social situations that can erupt into violence.

Environmental refugees are expected to begin to dramatically shift the ethnic and cultural makeup of communities as they flee ecologically unsustainable areas to find new economic opportunities (Raleigh 21). As refugees seek new areas to live and work, states and environments may be unable to provide shelter, sustenance, and protection (Saleyhan 2008). Migration is viewed as a primer for violence, but not a direct cause. However, environmentally motivated migration brings together strong primers, those of environmental scarcity, decreased carrying capacity, and new ethnic interactions (Raleigh 36). Competition for resources and power in areas experiencing influxes of refugees or migrants can trigger violence, aided by additional environmental degradation of resources.

Primers have relative effects depending upon the social and natural landscapes of a region, and will be specific to the state strength, cultural values, land management practices, and landscapes of an area. In regions where subsistence agriculture supports entire populations, desertification, drought, and changes in precipitation play central roles in weakening populations (Bell 17). Other regions with reliance upon domestic non-renewable resources such as petroleum face the threat of violent conflict due to resource control and environmental practices on a global level (Evans 12). Populations that are dependent upon renewable resources may “suffer in silence and misery” rather than organize themselves for civil strife (Homer-Dixon 18-19, 21). States are more likely to fight for control over non-renewable resources, which represent greater power on the international stage; non-renewable resources also maintain a state's industry, the military, and infrastructure. Control over non-renewables is a stronger impetus for violent conflict (18-19).

Even as the effects of climate change become more visible globally, researchers have not reached consensus as to whether climate change plays a main role in motivating violent conflict. Often, statistical evidence from models is given by researchers who do not believe that climate change will have an impact on violent conflict or societal change. These trends do not show consistent trends between resource depletion of a region and violent conflict. Halvard Buhaug, in his article “Climate not to blame for African civil wars,” uses a purely quantitative approach to measure the incidents of civil wars and war deaths against precipitation and temperature anomalies from 1960 to 2005 (16478).

This quantitative model does not break down modeling by resource availability, state government models, ethnic makeup, or migration patterns. These factors play a huge role in determining the effects of temperature or precipitation anomalies on a region. Independent or lurking social variables create a significant effect on models and cannot be neglected when determining the effects of climate change in vulnerable regions (Bell 8).

Researchers who deny the correlation between climate change and violent conflict sometimes use a framework of reason to disprove the link, believing that individuals will cope with resource depletion in “rational” ways. Idean Salehyan dryly states, “[W]e can see that violence is generally a poor response to resource scarcity, given the alternatives . . . armed conflict by itself does nothing to resolve the underlying incompatibility over the distribution of resources” (317). This perspective does not fully recognize the rationale behind armed conflict; “resource wars” encompass a variety of rational and non-rational motivations. Expressions of power over rival ethnic, religious, and regional groups, existing as dormant social primers, can be translated into a conflict that is seemingly only about resources.

The genocide in the Western Sudanese region of Darfur is an excellent example of the academic conflict over climate change as conflict primer. While UN Secretary General Ban-Ki Moon held up the Darfur crisis as an example of climate change conflict in 2007, other researchers and policy makers saw the conflict as an ethnically motivated war between Arabs and non-Arabs. In reality, the situation in Darfur encompasses all of these primers and motivators; regional ethnic Arabs, traditionally pastoralists, sought to destroy non-Arab agrarian groups after drought decreased access to grazing lands in the region. Historical context shows that animosity has always been felt between ethnic Arabs, represented by the central government, and indigenous non-Arabs, who organize themselves in smaller ethnic collectives. Environmental degradation was the trigger for groups to act upon long-simmering ethnic conflicts. Arab Janjaweed militias, backed by the central Khartoum government, were given heavy military support; this same militia and government is funded by revenues from oil, a non-renewable resource. The displacement and migration of over 2.5 million people internally and into bordering Chad has greatly increased resource and security stress. State-sponsored violence against its own citizens is an excellent method of managing the use and trade of natural resources, while destroying populations in the process (Hsaio 2011). The Darfur conflict is a strong example of the results of environmental and social primers creating complex and devastating violent conflict.

Climate change and violent conflict need to be viewed regionally; the vulnerability of populations and the climate effects felt within a given landscape need to be analyzed together to determine the likelihood of violent conflict occurring (Evans 6). This measure of vulnerability is often identified by the population’s unique dependence upon natural resources and ecosystems (Barnett 641). Quantitative analyses alone cannot fully model the impact that climate change will have on the social stability of a region; the human element of the situations must always be taken into account. As political uprisings in the Global South have come to head in the spring of 2011, social scientists and researchers have seen individuals break strong states to achieve their own visions of governance.

These struggles represent both a grasp for basic resources and a desire for self determination. Knowing the impact that environmental scarcity can have on existing vulnerable communities, strategies for mitigating violent conflict in the future must take into account the effects that climate change will have.

Uneven cross-boundary trade and resource use leaves the most vulnerable regions of the world to face the economic and environmental consequences of neo-liberalized and transnational trade.

Basile Ikouebe of Congo Brazzaville observed, “there is some irony that Africa, the region least responsible for global GHG emissions, is likely to be the worst affected by the 'excess consumption and carefree attitude of the rich'” (Brown 41). Models show that Sub-Saharan Africa will be the most vulnerable area to extreme drought and population change in the future (Raleigh 15). To compound matters, Western industrial powers and emerging economic nations dominate the discussion and decision-making around the effects of climate change; the Global South has little voice on the international stage in discussing its own fate. Oli Brown states, “Africans [and the Global South] are not really the intended audience of the post-Kyoto debate, but they are part of the evidence being use to make it” (42). How, then, can effective mitigation strategies for individual localities be achieved without representatives from vulnerable communities participating in the discussion of climate-change impacts? Holistic approaches to research, policy making, community empowerment and involvement, and land use need to be considered when engaging in this process.

How do we determine the extent to which climate change will affect the social structure of our future world? The early 21<sup>st</sup> century has seen researchers, politicians, and leaders defending and dismissing the impact of climate change by turns. While academic debates circle each other, significant changes to the social and environmental landscape of conflict-torn regions have occurred. The Arab Spring and drought in the Horn of Africa are case studies that could exhibit further links between violent conflict and environmental scarcity driven by climate change. The climate-driven drought and famine in East Africa has been amplified by major migrations from Somalia into Kenya and extreme violence against citizens and aid workers. Egypt, Algeria, Libya, and other states with long-standing social inequalities experienced extreme social change in the spring of 2011, due in part to state control of non-renewable resources and threatened food security. In both of these situations, states were unable to adapt quickly to the needs of a population; weak ecosystems and states allowed openings for violence (Bell 5, Homer-Dixon 26). Reflecting upon the complex motivations and triggers to such incidents can create frameworks for more effective rebuilding. As the effects of global climate change increase, it becomes imperative that researchers and leaders find collaborative means to prevent and mitigate human disasters that can result from environmental scarcity.

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