

## Climate Change and Its Effects on Conflict

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Climate change is not a new concept in the news and current events, but how does it affect conflict and exacerbate the growing tensions around the world? According to the glossary of terms for conflict resolution and peacebuilding put out by the United States Institute for Peace and the Academy of Conflict Management and Peacebuilding, “conflict is present when two or more individuals or groups pursue mutually incompatible goals,” and this definition recognizes it as “an inevitable aspect of human interaction” which can be partaken through violent or nonviolent means (Snodderly 14). Of course, conflicts and the causes that lead up to one are multifaceted and cannot just be explained by one factor alone, but climate change plays a definite role in creating tensions necessary for conflict. A report from the Center for Climate and Security states that “the consequences of climate change can act as stressors that ignite a volatile balance of underlying causes into a conflict” (Slaughter 1). Sustained trends caused by climate change can exacerbate tense situations leading up to the conditions for conflict, only needing a trigger for the spark of conflict. Currently the world faces the scene of heightened tensions in many states, waiting to boil over, where climate change has only made these situations worse. In some current ongoing conflicts, climate change had a key role in creating and continuing the conflict. However, although this rapid climate change is relatively recent in human history, climate trends and the environment have had an effect on conflicts throughout human history.

### **Climate Change and Conflict in Human History**

From the moment humans traveled from Africa and began spreading around the world, humans have affected the environment. In turn, the environment has impacted human settlement. A structural change that can occur due to changing climate trends that could provoke conflict is scarcity, or the idea of a limited resource that has high demand. Scarcity can occur in three categories: physical, socio-economic, and environmental scarcity. Physical scarcity refers to the availability of finite resources,

socio-economic scarcity refers to distribution differences within a country or society, and environmental scarcity refers to the availability of renewable resources. Climate can affect all three forms of scarcity making resources more limited. Another way climate trends can create potential conflict situations is through resource abundance. After the climate fluctuations, a new, valuable resource may appear more plentiful in a certain region sowing seeds of unrest through competition. Tying these two ideas of resource availability (lack thereof or in abundance) together forms a factor for migration.

Migration, used to describe moving populations, can create scarcity if too many people migrate to a certain region. Furthermore, abundance works as a pull for migration, creating a reason to migrate to that particular region.

An early example of climate trends contributing a source of conflict was the clash between Neanderthals and humans. During the Ice Age, few humans lived in the Eurasia region, except for some pockets where humans could survive in caves along river valleys. Neanderthals had a far greater population in these frozen regions. During the Holocene Warming Period at the end of the Ice Age, the ice began to retreat, and was replaced with flora and fauna. As the Earth warmed, humans began to venture from Africa. As they pushed upwards into Europe, they began to have greater contact with the Neanderthals that lived there. The migration patterns of humans led them into direct conflict with Neanderthals. When humans invaded more northern territories that were once inhospitable to them, control of and access to hunting grounds became the root of conflict between humans and Neanderthals (Lee 27-28). The exact categorization of Neanderthals (are they a pre-human species or an entirely different species?) as well as the actual reason for their demise are controversial topics in the scientific community. However, humans had some role to play in the extinction of Neanderthals as they increased contact with each other. Humans had superior technology giving them an edge in direct combat and made them better hunters leading to a decreasing supply of food for the Neanderthals (30).

Another time the environment affected human civilization was in the case of the Mayans. However, unlike the human and Neanderthal conflict, the Mayan Empire faced a “livelihood war” (Lee 35). Around 8000 BC, humans settled into the Mayan lowlands where they started large agricultural processes around 2000 BC. Overtime, the Mayan

Empire's population increased, and eventually stretched from the Mexican Yucatan to Honduras. Over about a 200 year period, the Mayan Empire experienced cycles of dry and wet times leading to population growth and the eventual decline of the Mayans. According to Lee, "water played a critical role in Mayan society," and reservoirs were kept to store water during the dry months of the year (36). Therefore the Mayans, especially those in landlocked cities, were vulnerable to any drought or prolonged dry periods. Along with dependency on water supplies, many Mayan cities were overpopulated and may be among the top populated areas of the pre-industrial world. In these densely populated cities, the people were dependent on the limited water supply and exhausted agricultural systems (Lee 36-37). Increased warfare, internally and externally, significantly added to soil degradation making agriculture even harder. With overpopulation and insufficient agriculture, came malnutrition leading to decreased productivity economically. All these factors combined made a situation so fragile that it was vulnerable to any major event such as extreme weather or a terrible leader, and the demise was inevitable for such an "enormously strained system" (Lee 37).

In both these historic cases, the environment and the impact it had on humans led to conflict and the eventual downfall of a group. In the first, changing climate created a pull for human migration resulting in conflict between humans and Neanderthals. Consequently, competition for resources ensued, and eventually Neanderthals became extinct. In regards to the Mayans, the conflict was internal, and the poor use of resources and failure to adapt sustainably to environmental shifts resulted in the collapse of the Mayan Empire. Of course, in these two scenarios, climate change as the way it is understood today did not occur, but these historic cases illustrate how humans and the environment affect each other in negative ways. In the modern era, the world is more connected than ever and climate events felt in one region can have dire implications in another.

### **Current State of the World**

Figure 1 depicts the world, and the various degrees of fragility faced in each state. Dark blue symbolizes the most sustainable governing processes while dark red symbolizes the most fragile states. This index is calculated by the Fragile State Index, powered by the Fund For Peace, based on twelve indicators spanning cohesion,

economic, political, and social spheres. These risk indicators, when taken as a whole, provide the status of any state at any given time, which then can be used to compare against other states or other times. Each indicator has a potential score of 10, and is then added to the other indicator's scores providing the state's fragile state index, so scoring higher on any indicator means a higher risk of conflict. Scores of 30 or less qualify the state as sustainable (blue in Figure 1), 31-60 as stable (green), 61-90 as warning (yellow/orange), and 91-120 as alert (red).

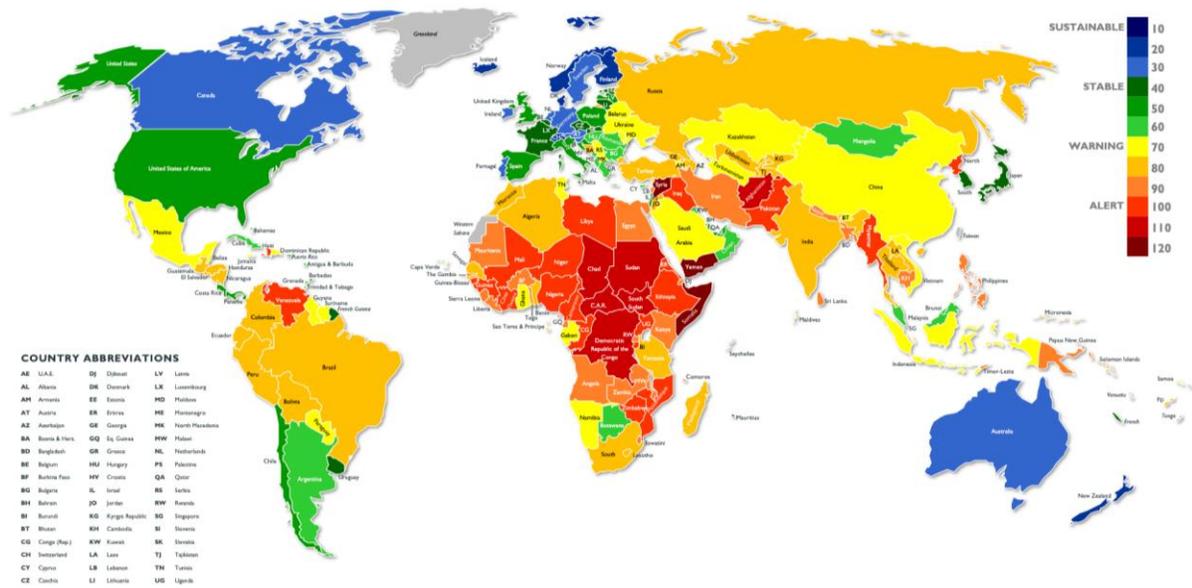


Figure 1: Fragile State Heat Map in 2021 (“Fragile States Index”)

Climate change can be an exacerbating factor in all four groups of indicators. Within the cohesion indicators, one is a state's security apparatus and "considers the security threats to a state." Climate change can present a challenge in particular for the security of a state due to nuclear trends which a working group on climate-nuclear-security affairs reports. As a state pursues nuclear energy, it faces the risk of catastrophic nuclear events, and at times it can be vulnerable to extreme weather events. Another cohesion indicator is group grievance, focusing on the status of the various groups within a state. Group grievances can include the uneven and unfair distribution of resources, which can be exacerbated by climate change if resources become scarce. This idea of inequality with the division of resources ties into the economic indicators and can contribute to unequal economic development (an economic indicator). Furthermore, climate change can exacerbate the human flight economic indicator as previously discussed with its impacts on migration. Within the political indicators, climate change could affect the public services given by creating difficulties in the state's infrastructure through destruction from severe weather events. Finally, within the social indicators, climate change can affect the indicator of refugees and internally displaced persons with migration.

As shown in Figure 1, the most fragile countries are located in northern and central Africa as well as the Middle East. The top five most fragile countries from the Fragile State Index in 2021 were Yemen, Somalia, Syria, South Sudan, and the Central African Republic (ranked from most fragile to the fifth most fragile). These states therefore, are the most susceptible to conflict and may already be in conflict. Climate change's effects will only serve as a worsening factor for these states. Furthermore, these states labeled as alert have weaker coping mechanisms for any climate related events than those labeled as sustainable. The Intergovernmental Panel on Climate Change (IPCC) notes that the risks associated with the effects of climate change will be unequally felt globally, and will disproportionately affect disadvantaged people and developing countries. Alvarez explains that "the ability to absorb changes and the speed with which system, structures, and/or individuals are able to bounce back from shocks and setbacks" refers to the country's resilience. A state's resilience against climate change has to do with the intersection of three variables: the degree of climate change's

impact, the sensitivity to these impacts, and the ability and readiness to adapt to the new environment (74). Therefore states vulnerable to climate change are ones where climate events have a severe impact on the state's infrastructure, and unfortunately many of the weak or failing states reported by the Fragile State Index fit this characterization.

The Center for Climate and Security reports twelve "epicenters" of climatic risks to international security. These epicenters meet the three qualifications to being important climatic threats: concern of global security (a disruption in a local region will have large spread harmful consequences internationally), are vulnerable to a quickly changing climate (such as increased frequency and severity of weather trends), and are a risk not tied to one geographical location but can be found in multiple regions around the globe (such as coastal cities). Among these are concerns about the sustainability of food sources and livelihoods from agriculture and fishing, such as the risk to cash crops like coffee. Along the lines of ocean levels rising, island states and coastal megacities lie in danger of disappearing under the sea. Regions that depend on glacier melt for water, now face the challenge of water weaponization. These epicenters paint the picture of an interconnected world, but also of a world threatened by climate change.

Francesco Fernia and Catherine Werrell present the concern of state sovereignty and divide the countries into six categories in regards to climate change, and their place within it: catch 22 states, brittle states, fragile states, disputed zones among states, disappearing states, and non-state actors. Catch-22 states describe the states where the resources within the states are limited, so the state must turn to the global market to meet demand. However, the global market is vulnerable to climate change in any region, and the state importing resources must be able to handle the fluctuations in these markets or rely on their own resources, thus a catch-22. Brittle states refer to states that are not necessarily classified as a fragile state by the fragile state index and give off an appearance of stability. However, in reality, underneath lay factors driven by climate change that are vulnerabilities to these states. Fragile states are those as defined by the Fragile State Index, and where climate change can increase the fragility of these states. Disputed zones among states refer to those areas that are claimed by multiple governing bodies, and climate change can increase tensions and pressures

surrounding these territorial claims. Disappearing states refer to the states that will eventually be submerged due to rising sea levels. Non-state actors come into play when important resources such as water and food become an even greater commodity as scarcity sets in.

### **Case Study: The Arab Spring**

In 2010, Tunisia erupted into protests against the government. By 2011, the series of protests and uprisings quickly spread across Arab speaking countries in North Africa and the Middle East through the use of social media. The protesters criticized the authoritarian government, and Egypt and Tunisia quickly upturned the existing regimes in matter of weeks (Editors of Encyclopaedia Britannica). The call for democratic processes and revolution against these governments occurred due to a myriad of complex reasons mainly around political and economic grievances. Among the economic grievances, was the increase in food prices, demonstrated by the protesters of Tunisia, Yemen, Jordan, and Egypt who raised a baguette to convey their anger over the rising prices of bread.

Although climate change was not a strong enough factor to be a trigger for conflict, it provided stress in the global food market as weather events caused harm to the production of wheat. In 2010, Canada, the second largest wheat exporter behind the United States, had a record rainfall which cut its wheat production by a fourth. As a result of drought and bushfires in Russia (the fourth largest supplier), wheat yields were halved, and Russia responded by banning exportation of wheat, barley, and rye (Johnstone and Mazo 17). In further devastation to the global wheat supply, Sternberg argues that a precipitating event to these revolutions started in China when a “once-in-a-century winter drought” in China caused a reduction in the global wheat supply as China is the largest wheat producer and consumer in the world (11). The arid climate of these countries makes agriculture difficult forcing them to import much of their food supply. In Egypt, bread accounts for one third of caloric intake. Global wheat shortages resulted in a significant price hike for bread in the Middle East and northern Africa as the top nine importers of wheat are Arab countries, seven of which were wracked with revolutions in 2011. Statistically, in states of political unrest, households spend about 35% of their income on food products (12).

These revolutions that surged through these Arab countries may have been sparked by the outbreak in Tunisia, but all have individual underlying causes, and definitely had varying consequences in each state. Syria's descent into uprising and revolution surprised many international analysts, believing in the stability of the regime of President Bashar al-Assad, but Fernia and Werrell discuss the political and economic unrest just under the surface in Syria. Economic concern arose with environmental challenges to agriculture made worse by political inefficiencies. From 2006 to 2011, Syria experienced a devastating drought and crop failure which an expert, quoted by Fernia and Werrell, states as being "the worst long-term drought and most severe set of crop failures since agricultural civilizations began in the Fertile Crescent many millennia ago" (25). The United Nations and the International Federation of Red Cross and Red Crescent Societies reported that the droughts caused upwards of 800,000 people in Syria to lose their entire livelihoods. The 2011 Global Assessment Report estimated about one million Syrians as food insecure due to the droughts. This in turn set off a mass exodus of people who were agriculturally dependent, including farmers and herders and an increasing internally displaced population from rural to urban centers (24-25).

These economic losses individually and as a nation, were only exacerbated by poor governance. Political mismanagement of natural resources caused degradation of viable land for agriculture. The Syrian government promoted water-intensive wheat and cotton farming through heavy subsidization, as well as encouraging inefficient irrigation practices. Due to water shortages that ensued, farmers had to turn to country groundwater which depleted the groundwater levels in many areas of the country and caused concern for the water quality of the remaining supply in the aquifers. All of these factors combined with the rapidly growing population, sped up the land-desertification process making decreasing the usable land for agriculture.

### **Too Much Emphasis on Climate?**

Climate change is never the sole cause for conflict. As previously stated, conflict erupts due to many overlapping factors and causes and needs a trigger to spark. Therefore, climate change can only be an exacerbating factor of conflict, intensifying already strained relationships and economic concerns. However, some experts believe

that the discussion of climate change still places too much focus on the environment and the impacts it has on conflict, while disregarding the political, economic, and social factors. Betsy Hartman particularly takes issue with the notion of climate refugees and climate conflicts and the downplaying of other causes. She cites Stephen Faris' *Atlantic* article, criticizing his analysis on the Darfur conflict. Faris claims that instead of the commonly agreed upon explanation of ethnic hatreds, the real cause of the Darfur conflict was climate change. He explains that the distinction that should be made is not between Arabs and black rebels and civilians, but between "settled farmers and nomadic herders fighting over failing lands." As rainfall decreased in Darfur, once welcomed nomadic herders were fenced out by the farmers in fear of grazing on their already struggling lands. This significant decline in rainfall was explained by poor practices against the region's vegetation. Mistreatment of this vegetation exposed more sand and dirt which did not absorb as much sunlight as the plants. The cooling surface in turn brought clouds downward, and therefore lowered the probability of rain (Faris). Hartman contends that this analysis is limited and ignores key causes in the Darfur conflict, including the political economy of Sudan that helped create and sustain the conflict such as inequalities in the distribution of power and wealth, poor agricultural policies promoting the use of large mechanized farms with inefficient irrigation practices, and forced migration into so-called "peace camps" (236). Hartman warns against "environmental determinism [overriding] serious analysis of power relations" as it narrows the causes of conflicts and does not accurately reflect the complicated factors of conflict or migration.

The term "climate refugee" has issues as well for Hartman. She explains the notion of migration is too complex to accurately be categorized fully as climate driven. Furthermore, she has concerns over the misuse of the term refugee. She uses the UN Refugee Committee's definition of a refugee, "owing to a well-founded fear of being persecuted for reasons of race, religion and nationality, membership of a particular social group or political opinion, is outside his country of nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country" (238). By using the word "refugee" as a reference to any forced migrant, it splinters the understanding of those who seek asylum, and further politicizes the idea. Hartman fears

that the term “climate refugee” or “environmental refugee” could potentially “undermine the international legal regime for the protection of refugees” since there is no basis in international refugee law (238).

Hartman’s concerns in the overemphasis on climate in conflict and the use of the term “refugee” are well-founded as climate change has never been the sole driver of conflict. She fears the politically loaded term, “refugee”, as well as the potential of governments (specifically the United States) to use climate concerns to intercede into the sovereignty of other states (241). However, to disregard climate change from the discussion of conflict would be to overlook an important factor in the analysis of the situation. Furthermore, state sovereignty is always a difficult element in dealing with conflict and international security, but climate change should be used to update the pre-existing indicators of fragility in hope of preventing conflict violent or nonviolent. As will be discussed in the next section, the understanding of the relationship between climate and conflict should drive policy not to loopholes of international standards, but to globally achieve more security as inevitable climate events occur.

### **What Can Be Done?**

The Earth is warming; the IPCC provides evidence for global warming and the role that humans have played. Even if humans stopped all actions that contribute to climate change, the reversal of global warming effects would take years if not decades to be felt. Furthermore, any discussion on whether climate change is human induced or not is so politically fraught, future policies to mitigate or adapt to climate change will need to take into account political and geopolitical interests. States will most likely act in their national interest as they do in most scenarios, and economic interests may come in conflict with climate change action (Lee 153). In addition to issues of addressing climate change politically, the idea of conflict prevention is complex and multilayered. The glossary of terms for conflict resolution defines conflict prevention as

“measures taken to keep low-level or long-festering disputes from escalating into violence, but it can also apply to efforts to limit the spread of violence if it does occur, or to avoid the reoccurrence of violence. It may include early warning systems, confidence-building measures (hotlines, notification of troop movements), preventive deployment, and sanctions” (Snodderly 15).

In this sense, climate change is just one factor in conflict, and one cannot just focus on the mitigation or adaptation to climate change to prevent conflict. Alvarez argues for the promotion of building the resilience of fragile states to cope with the effects of climate change. As previously discussed in this paper, the effects of climate change, although occurring all around the world, will not be felt equally among states. Therefore, Alvarez calls for “developed nations [to] invest in creating the economic, political, and social infrastructures needed to deal with the consequences of climate change” (154).

Furthermore, these developed nations with resilient infrastructure largely received this strength through practices in the Industrial Revolution that contributed the most to global warming.

A more political feasible action to take is presented by Lee. He urges for updated climate change models that account for variation, with a “pessimistic” view instead of the relatively optimistic ones that the IPCC gives. This pessimistic view would increase the probability of climate changing abruptly making adaptation difficult, and it is necessary to understand this trajectory if there is any chance of preparing and preventing potential conflict. Whether it is a large leap to combat the consequences of climate change or a tentative step to update existing information, action must be taken as the window for mitigation against climate change closes and the necessity to adapt becomes the only option.

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