The Most Critical Resource: How Climate Change Fuels the Crisis in Syria and the Implications for the World at Large

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THE MOST CRITICAL RESOURCE: HOW CLIMATE CHANGE FUELS THE CRISIS IN SYRIA AND THE IMPLICATIONS FOR THE WORLD AT LARGE

by

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ABSTRACT

The Syrian crisis, both domestic and international in scope, may well be the defining geopolitical challenge of the generation. Climate change may be the single greatest challenge to face humanity in the entirety of our species’ life history. The dramatic effects of climate change can be seen in the origins of the Syrian crisis when one looks to humanity’s single most critical resource: water. We take the word critical to have two meanings in this context: first, that water is essential to human survival and second that water is a resource in critical condition. Syria’s water crisis pre-dates the civil war in which the nation is embroiled and the subsequent refugee crisis that has sent shockwaves to nearly every corner of the Earth.

To what extent has climate change driven the crisis to its current point and how does it continue to drive it today? This study seeks to explain the global crisis in terms of climatically affected resources with particular emphasis on water. The analysis of shifting climate conditions and human migrations proposes that the crisis cannot be brought to true resolution without a conscious and targeted effort to remedy the root cause: the unprecedented depletion of the Earth’s water reservoir. The international implications of the horrors that have gripped Syria go beyond concern over an overflow of refugees or conflict spilling across geopolitical lines; water is a common resource which no technological advance can free humanity from dependence. The lessons learned by the global community through the Syrian crisis will define the next generation of global politics and lead humanity for better or worse, into an uncertain twenty-second century.
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CHAPTER I: INTRODUCTION

As the sun rose into the sky above the Turkish resort of Bodrum, a military police officer approached the body of a child, lying face down in the sand. The red shirt, blue shorts, and Velcro-strap sneakers were all saturated with water from hours in the sea. Aylan Kurdi had drowned in his father’s arms as he traveled with his parents to escape a veritable hell on Earth. The image circulated across the world instantly and for a few weeks tears were shed, hearts were strained, and millions of people from all walks of life asked how such a horror could have come to pass. Life continued however and the memory of Aylan Kurdi’s body was lost to the majority of us. Few recall the fact that his mother and five-year old brother met much the same fate, on the very same day, or think of the fact that Syrian children have suffered and died every day since in equally horrifying and often far more violent manners.

Over seven years ago a civil war began in Syria that has left the country in a perpetual state of violence and uncertainty. The cause of the war at its most basic level would seem apparent: the rule of a dictator and the neglect of the populous. Dictatorship however is not new to Syria so on the academic level the question persists: why now? Why did the revolt not begin during the thirty-year reign of Hafez al Assad? Why did the revolt not happen when Hafez died and his son Bashar al Assad rose quickly to power? What pushed the people of Syria to the point where the threat of the iron fist of their government was not enough to keep them subdued?

One of the fundamental lessons of history is that cause and effect chains can be immensely complex, particularly when it comes to the causes of war. It is rare that any
single factor can be identified as a singular cause for war and such is likely true in Syria. The major causes of conflict however, can often be identified. One look at climatic patterns reveals the Syrian Civil War began after a period of severe drought, with single droughts lasting for three years or more and a consistent occurrence of drought in the region for over twenty years. The Syrian people have suffered for years through a shortage of the critical resource that is water and as such have endured a severe shortage of food. As such, it seems possible that the Syrian Civil War is destined to join the long bloody history of conflict stirred by resource shortage.

Studies of temperature and drought patterns related to anthropogenic climate change, such as that which was done for the American Meteorological Society by Bergaoui et al. (2015), suggest that the Syrian drought is an effect of a rapidly changing climate and that the actions of humanity are largely responsible for the climate crisis in Syria. The question of the global response to climate change thus morphs to become a question not only of environmental conscientiousness but also of human morality. If our consumption of carbon-emitting resources can provide a catalyst by which famine and violence can spread, is it not the moral responsibility of humanity to rise together and respond to the challenge of climate change?

The Intergovernmental Panel on Climate Change (IPCC) states, “Climate change can indirectly increase risks of violent conflicts by amplifying well-documented drivers of these conflicts such as poverty and economic shocks” (IPCC, 2014). This study proposes to expand on this idea, and actually argues that the effect of climate change on conflict is even more direct. Climate change not only can amplify conflict drivers, it can itself create them. While this study concurs with the idea that already existing conflict
drivers will be made worse by climate change, it additionally proposes that climate change will be the single largest contributing factor to future global conflicts.

If indeed climate change has played a role in the Syrian Civil War, we, as a global community must begin to plan for the future and for a massive increase of conflict and refugees the world over. By all scientific estimates, the climate trajectory on which we are moving will result in natural disasters of all kinds, from rising sea levels, to super storms, and to droughts. We must begin to identify dangerous situations that could be made worse by drought and other climatic events and make plans for a response. Ultimately, the global response to climate change must go beyond the environmental movement. History has unfortunately shown that the desire to protect the environment will not be enough to slow or attempt to reverse the course of climate change. Our need to respond to climate change goes beyond any desire to preserve the existence of the Polar Bear or the Narwhal. Without our action the next century may see horrible violence as a result of a world depleted of essential resources. At the back of our minds should lie a constant, horrifying truth: we are running out of fresh water. This is not a hypothetical discussion; at the time of writing, Cape Town, South Africa is not able to supply its citizens with water, and it is by no means the only location at risk for such strife.

As we will explore, climate patterns around the world can have far reaching effects. Climate change will alter life on Earth as we know it. There are certain resources, water among them, without which we simply cannot live. The absence of such resources could drive humanity to extremes we rarely consider. The web of water resources and the human population is complex and many layered. It will not be possible for us to explore every angle of the subject. The work that follows will provide a case study, the Syrian
conflict, and will attempt to parse out the role of drought in facilitating that crisis. While Syria will provide a platform for this project, the ultimate goal is to consider the future and the dangers to come.

Albert Einstein, pondering the question of nuclear proliferation supposedly once said that he did not know with what weapons World War III would be fought with, but that World War IV would be fought “with sticks and stones”. Much in the same spirit, with all of the potential global flashpoints we see today, it is hard to say what World War III will be fought over. Whether over economic dominance between rising powers or old disputes over borders and ideology, we must all fear that a third world war could come to pass. A world depleted of its most critical resources though could easily see a fight among humankind for control over those resources. Perhaps we will manage to avoid a nuclear world war over petty disputes, but if we do not act to reverse the severe damage we have done to our environment, then the war over water shall fall hard upon us.
Climate Conflicts

Though there is some dissent, scholars generally seem to believe that climate does play some role in conflict. Much of the research in this area deals with more specific aspects of climate, such as the role of temperature, precipitation, or other climatic trends in the facilitation of conflict. Additional debate exists around the question of refugees, both in terms of the academic question of why refugee crises exist in a given area and the practical approaches to handling high numbers of those people who could perhaps be considered “climate refugees”.

Human suffering has long been a subject of extensive research and writing. Such writing often deals with suffering due to conflict and other adverse living conditions. The most basic premise of examination here is how human suffering, plays a role in causing conflicts. Again, an important question of research here is: to what degree has a severe draught contributed to the civil war in Syria?

The most basic effects of climate on conflict can be seen with examples throughout history such as the idea of the Russian winter being the country’s best defense against invasion. Beyond such direct effects, does climate have a role in actually causing conflicts? There seems to be a high likelihood that climate does play a role in conflict either as a proximal cause or at least as a contributing factor. The United States department of defense considers climate change to be of critical importance to national security (Climate Change Adaptation Roadmap, 2014). There is however ambiguity as to what aspects of the climate contribute to conflict. Burke et al. (2009) showed a clear correlation between civil war in Africa and increased temperatures but could not reliably
account for the role that precipitation levels and corresponding crop yields had on these conflicts. Conversely, Buhaug (2010) claims that consideration of “major civil wars” shows no evidence of climate as a significant cause for conflict and states specifically that temperature and precipitation do not seem to have any relationship with conflict. Buhaug does recognize that this study does not sufficiently account for climate patterns in the long-term and that sustained climate change could affect the possibility of conflict. The study also largely analyzes immediate effects and as such is not a reliable indicator of long-range analysis of the relationship between climate and conflict.

Theisen et al. (2013) suggest that climate change will contribute to increased global poverty and day to day hardship but cautions as to whether such consequences will actually contribute to violence in a world that is seemingly becoming less violent, that is, a world that is experiencing less clearly defined warfare. The article does address the question of resource scarcity but seems to gloss over, at least to a degree, the potential impact of resource scarcity on conflict and offers in conclusion that conflict prevention remains for now, a minor reason for addressing the problems created by the advance of climate change. It may be wise to note that current actions to counteract the advance of climate change may not be sufficient (Reilly et al. 2015) and to suggest that an upsurge in violent conflict around the world may number among the few consequences of climate change that could actually draw a global response. Climate change exists in a positive feedback loop, and as such there is the possibility that the violence associated with climate change would escalate to match the rapid increase of climate related human catastrophes. Hsiang et al. (2011) contrasts Theisen in that they provide evidence toward a relationship between the changing global El Niño and La Niña cycles and conflict. The
study suggests that the risk of conflict in tropical climates doubles during El Niño years, a result that is especially interesting because of the established relationship between these climatic cycles and global weather changes which contribute both to draught and extreme weather events. El Niño years have been increasing in frequency with the progression of climate change (Trenberth and Hoar, 1997) thus resulting in more severe weather patterns due to global climate change and so the question can be asked that if these cycles are linked to increased conflict, will conflicts worsen as the weather patterns associated with the cycles become more extreme?

Critical to our question is an idea expressed in Scheffran et al. (2012), about the dangers of climate change to already unstable states. The Syrian state, in all likelihood would be quite unstable in the absence of climate change and may even be destined for partial or total collapse. The question is whether climate change is serving as a catalyst to such a collapse. While it is an unlikely and alarmist idea that a stable state, Australia for example, could collapse due to climate-induced drought, an unstable state does have that potential due to already existing civil and political unrest. Australia has experienced severe draught in the recent past, but never came anywhere close to collapse because of the political infrastructure in place. The aspect of state stability can be built upon to confront potential difficulties ahead for other states that lie at a coordinate point between the axis of potential for severe water shortages, and the axis of political instability.

A study specific to Syria conducted by Peter Gleick (2014) concluded that the Syrian conflict, as might be expected, is due to a conglomerate of factors including water scarcity. Gleick references both drought and poor management of existing water resources as potential factors in driving conflict. The most critical point of the study
however is the idea that population growth in the region is actually increasing, placing an
even greater strain on already scarce resources (Gleick, 2014). This idea of population
growth will be critical to the forecast of global hardship due to water scarcity.

One of the more surprising points from the existing literature is the correlation
between violence and high temperature, mentioned by both Burke et al. (2007), and Van
Lange et al. (2016). While high temperatures do, in and of themselves, make for
uncomfortable living conditions, the jump from long heat waves to armed conflict seems
extreme. One might expect that the high temperatures are a contributing factor to drought
and food shortages from temperature related crop die-off, but the literature is somewhat
vague on these points compared to what seems to be a clear correlation between
temperature and conflict. The question must therefore be asked whether some skepticism
surrounding the role of climate change in violent conflict is due to this focus on
temperature, from which the leap to violence is not clear. Perhaps if there was more
direct evidence offered of low crop yields and water shortages in conflict zones, if indeed
these challenges exist, there would be less debate as to whether or not climate change
played any substantial role in the violence that seemingly follows increasing
temperatures.

The 2017 Worldwide Threat Assessment of the US Intelligence Community to the
Senate Committee on Intelligence includes climate change among the list of security
threats to the United States. This report did not rank the severity of threats however the
fact that the same report which includes assessment of terrorist threats and threats to the
United States from state actors such as North Korea and Russia also includes climate
change should provide some sense of the severity with which the intelligence community
sees the issue (Worldwide Threat Assessment of the US Intelligence Community, 2017). Also noteworthy is the fact that the same report lists global displacement as a major security concern. A study conducted by Cecilia Tacoli (2009) identifies that predictions of an exponential increase in the number of environmental refugees is alarmist, citing human adaptability among other things. Tacoli does not however account for conflict due to climate change, and only considers the direct effect of climate change on migration patterns.

Logically, the argument can be made that in the future, climate change will be more responsible than any other factor for the displacement of persons all around the globe, so these security issues largely go hand in hand. This argument is based on a number of factors such as land loss and resource depletion. For example, as global sea levels rise, the ocean may claim entire island states such as the Maldives. What plans can be put into play to handle such a crisis? The dramatic disappearance of land will doubtlessly result in an overload of refugees. The issue of dealing with entire states losing the land that defines their sovereignty is one to which there is no clear answer. It would seem however that there is little consensus on the direct role of climate with regard to the causation of conflict. A lot the studies we have seen have explored problems within the realm of climate conflict, but overall, the umbrella role of climate on conflict seems to be ambiguous in the current literature.
Droughts

While debate still exists in certain sectors of society over whether or not climate change is occurring, or more recently, whether human activity has contributed to it in a significant way, we will not be attempting here to prove the existence of climate change. The simple reason for this is that anthropogenic climate change has been demonstrably proven time and again and as such the debate over pseudoscientific hokum is unproductive. More valid a consideration is over the direct effect of climate change on individual global weather events. Though climate change certainly can have an effect on any and all global weather events, the debate over whether any given event or trend is linked to climate change is valid.

Seager et al. (2007) projected that the southwest of North America would begin to see increasingly arid conditions as anthropogenic climate change progresses. Recent years would seem to verify this prediction as drought in the southwest has become commonplace. While this study is more localized, it does root the basic idea that anthropogenic climate change can in certain parts of the world contribute to more arid conditions. Trenberth et al. (2014) produced a study that indicated the role of climate change in causing droughts remains relatively ambiguous but does make the point that droughts increase in severity due to climate change. Increased drought severity would seem to be on display with the drought in Syria and other parts of the Middle East. Although drought may have occurred in the region before, the current drought cycle is unusually severe, with one study showing the current drought has been the most severe to hit the region in nine centuries (Cook et al, 2016). Prediction models suggest that the world has been increasing in aridity over the past several decades and that this century
will see a marked increase in aridity not only in the Middle East, but also across most of the globe (Dai, 2010). This has implications not only for the conflict in Syria, but also for other potential global flashpoints. The addition of a severe resource stressor such as water scarcity may be enough to initiate or worsen conflict in a number of locations around the world.

The literature does seem to show that not only does climate change result in the increasing aridity of the world at large, but that the drought in Syria seems to be an effect of that increased aridity. Kelley et al. (2015) acknowledges that the region in which Syria lies has always been prone to drought, but also suggested that trend maps indicate the reason for the severity of the recent drought may be due to anthropogenic climate change. This study also makes inferences about the effects of climate-induced drought on conflict and mass migration, due in part to low crop yields. Li et al. (2009) projected that climate change increases drought risk globally with rising temperatures and also projects that the risk to crop yields will increase significantly as anthropogenic climate change progresses. The same study also suggests that Africa at large will be the hardest hit by low crop yields due to climate change, which has dramatic implications for future conflict risk assessment.

Most of the debate surrounding the issue of climate change does revolve around whether or not droughts are caused by climate change directly. One might expect that if jet streams shift as a result of climate change then precipitation trends will change, leading to potential droughts. What does not seem to be ambiguous is the role of climate change in worsening already existing droughts. At the core of the issue, this difference is relatively small as short droughts have always been relatively commonplace. The fact
that droughts are worsened by climate change is sufficient to support the idea of climate change being a contributing factor in the Syrian drought. Otherwise one would imply that the worst drought the region has seen in 900 years is in no way connected to the rapidly changing climate of the globe, which would seem to be flawed logic.

Resource War

Any classification of the Syrian conflict into such a narrow box as an ethnic war or a territory war is limiting because the conflict is so convoluted and as we will see, different groups are fighting for different reasons. We should however stop and take a moment to consider the possibility of viewing the Syrian war and any other climate induced conflict as resource wars. In doing so we will put aside, for the sake of simplicity any other tensions between groups. We will also be stretching a bit, the classic definition of a resource war used by scholars such as Michael Klare. The typical concept of a resource war is perhaps best explained with the simple idea of an oil field existing in border territory between two nations. One nation, seeking the opportunity to profit off of petroleum stores, invades the other in an attempt to seize the land and thus the oil. While this is a resource war in simplest terms, we can expand the concept to situations that are not quite so black and white. The Congo Crisis of the mid twentieth century was largely a humanitarian crisis but was at least partially driven by the desire of outside interests to profit from copper mines. Violence ensued due mostly to the oppression of the Congolese by European imperialists. However, there was certainly a desire by the Congolese to be in control of their own natural resources and improve their economic stature (Gibbs, 1991). Expanding further on the idea, while the fight in Syria is not strictly over water, though
there have certainly been battles to control water resources, the conflict could be defined as a resource war in the way that the lack of water acted as potential kindling for the beginning of the conflict. As we go forward, it is likely that we will see more resource wars both in terms of direct combat over a specific resource and in terms of resources as war catalysts.

Additionally, if we expand the theory of Enquist and Leimar (1990) to the Syrian conflict, we can see that potential undertones of Darwinian fitness may exist. To loosely apply the theory it could be stated that resource wars, particularly over survival resources, can have an impact on fitness due to the need of an individual to survive to reproduce. In the absence of sufficient resources such as food and water, there could be a genetic drive to fight for these resources at any and all costs. Resource wars could therefore prove to be a dangerous wave of the future as it will be individual survival at stake, rather than larger interests. Individual combatants fighting for their own lives and lineages could make for wars that could not be easily ended. The fact that resource wars of the future will be wars for the very survival of individuals or populations creates the potential for them to be defined in a Darwinian sense.

Having examined existing literature surrounding conflict, climate change, and resource struggles, we will now move into the case study of the Syrian Civil War. Understanding the development of the conflict in Syria will allow us to form a wide lens view of the dangers climate conflicts pose to our world in the future.
CHAPTER II: SYRIA IN CONTEXT

Syria lies in a region of the globe that has been fundamental to forming the world as we know it today. The land has seen conflict and peace, poverty and prosperity and has for decades been at the center of the study of human civilization. If we are to understand modern Syria and the conflict within, it is crucial for us to understand Syrian geography, demographics, and history. Only with a working knowledge of what defines Syria can we begin to attempt to think about the issues that plague it today. The disclaimer here is that a full exploration into the history of Syria is far beyond the scope of this project. A deep dive into Syrian history would take up at least several volumes. Covered in this chapter are some of the aspects of the life history of Syria most critical to understanding the conflict we see today. In the spirit of starting from the beginning we will look first at the geography of the region—a critical feature of any issue or conflict.

Geography

The Fertile Crescent encompasses the entirety of Syria, and much of the area surrounding the Tigris and Euphrates Rivers. The life-giving force of fresh water once made the region near the rivers an agricultural oasis. There is however a great deal of desert that encompasses the Syrian landscape. The Syrian Desert exists mostly in continuity with the vast expanse of the Arabian Desert and as such the population centers are near the eastern border closer to the Mediterranean Sea and the northwest and central regions in proximity to the rivers (CIA World Factbook). The desert is broken up in places by minor mountain ranges; however, the country is mostly flat, and the mountain elevations are relatively small (World Atlas). Just over 75 percent of the land in Syria is
used for agriculture, however nearly 60 percent of this agricultural land is used for grazing livestock and is not capable of crop production. The amount of Syrian land used for crop production accounts for approximately 30 percent of the total land area of the country (CIA World Factbook).

Syria is a country of medium land area, similar in size to its neighbors Jordan and Iraq, but smaller by far than other neighbors such as Iran, Turkey, and Saudi Arabia. Syria shares its borders with Lebanon, Israel, Turkey, Iraq, and Jordan, as well as occupying coastline of the Mediterranean Sea. The three largest cities are Aleppo, Damascus, and Homs, all of which are located in the eastern sector of the country along a single highway (World Atlas).

Demographics and Home Economy

By the statistical compilation of the U.S Central Intelligence Agency, as of July of 2017 the population of Syria was a just over 18 million and was composed primarily of ethnically Arab individuals (approximately 90 percent) with the other major ethnic groups being Kurds and Armenians. Syrians are predominantly Sunni Muslims, with Christians making up the second most prominent religious group, though at only 10 percent compared to 87 percent of the population that identifies as Muslim. Despite the conflict, the birth (21.2 per 1000) far outpaces the death rate (4 per 1000) a factor that has contributed to the fact that nearly one in three Syrians is under the age of 15. Unemployment rates are extremely high at approximately 50 percent. Syrian per capita GDP for the most recent data (2015) was 2,900 US dollars, which is less than five percent of the United States per capita GDP. The most recent estimates suggest that over 80
percent of Syrians are living in poverty. The inflation rate in Syria ranks among the worst in the world. A single US dollar is equivalent to 514.6 Syrian pounds (CIA World Factbook).

The geographic, demographic, and economic overview given here will be important to keep in mind as they allow for visualization of life in Syria, particularly in understanding the level of hardship under which the average Syrian lives. Critical to remember will be the fact that an overwhelming majority of Syrians live in poverty, that vast swaths of land have historically been used for agricultural production of some sort, and that by birth and death rate comparisons, the population of Syria is actually growing.

**Historical Overview**

The history of Syria is nearly long as the history of human civilization itself. The land that defines Syria as a country has been occupied by the Macedonian, Roman, and Ottoman Empires (Tibawi, 1969). These three notable names constitute just a few of the empires and societies that have moved through the landscape, each in its own way playing a role in shaping the development of Syria today. The state of Syria that we know today however began to shape in the aftermath of World War I with the collapse of the Ottoman Empire. Initially Syria was under the dominion of France, thus the borders of what we now know as Syria were drawn by western European influence, as is the case across much of Africa and the Middle East. The modern state of Syria gained its independence in 1936, just prior to the start of the Second World War; however, European influence persisted with French troops remaining in Syria for years. During World War II, Germany established some measure of rule over Syria, as it had conquered
France, however Syria was becoming steadily more independent and in the aftermath of the war France was forced to leave Syria entirely (Tibawi, 1969). The next few decades would be defined by the struggle for power from one authoritarian regime to the next, with military coupes being relatively commonplace.

Hafez al-Assad rose to power in 1970 and proved to be more adept at holding it than had previous authoritarian regimes in Syria. Though uprisings did occur, none were on the scale of what we see in Syria today. Assad was a brutal tyrant, ending uprisings with military might and never allowing any insurgency to gain a sufficient foothold to provide a reasonable challenge to his rule. For three decades, he presided over a stable, albeit authoritarian, Syrian state (Danin, 2011). Syria under the Assad regime was arguably more stable than it had been since the days of imperial rule, with that said; the human rights record of the Syrian government was abysmal. The later years of the first Assad regime saw the beginning of the long and difficult drought cycle in which Syria still suffers. Hafez al-Assad died in the year 2000, leaving the rule of Syria to his son Bashar who, it was hoped, would bring political reform to a country that was starving for such reform.

The Ascent of Bashar al-Assad

Rule of Syria was not the fate for which Bashar al-Assad had been prepared. It had been Bashar’s older brother, Bassel, who was to take over as ruler of Syria when Hafez died, but a car accident killed Bassel prior to his father’s death. From that point forward, Bashar was the heir apparent of the Syrian regime.
Ironically, Bashar al-Assad’s political career began with a glimmer of hope. Bashar was not expected to be the brutal dictator his father had been and was seen by many as the best opportunity Syria had seen in some time for political reform. In fact, the early years of the second Assad regime did start with a move towards an improved Syrian state. Under Bashar al-Assad, the economy improved, and the threat of state oppression seemed to abate to a degree. Assad also resisted deifying himself as his father had done, preferring to identify himself as the leader of the people, rather than the ruler of the people (Lesch, 2005). The hope for the future was that Assad would rule fairly and bring prosperity to Syria. He was by all definitions still a dictator, largely unanswerable to anyone and having gained power through a bloodline, but he was quite popular. As the regime moved forward into the future, the drought cycle continued. At this point, there did not seem to be anything out of the ordinary. Syria is, as we have established, largely a desert nation, with oasis proving more of an exception than a rule. Droughts were not uncommon, and farmers sustained through what seemed at the time to be a typical drought.

From his ascent to power to roughly 2010, Assad enjoyed popular support. This may have been at least partially due to his lesser dictatorial presence in comparison to his father Hafez. Through the early years of the second Assad regime, Syria began to move into the modern world, there was hope for industry and trade (Hinnebusch and Zintl, 2015), but the first cracks were beginning to appear in Syrian stability. Governments work in a similar way to most things in the physical world and there may even be an application of chaos theory at play. As the breakdown of a system progresses, the aforementioned breaking begins to occur faster and faster as the structures that hold so
much together fall into disarray. As Assad and Syria moved to the future, drought trends persisted. Figure 1 below shows that Syria has been getting progressively drier over the course over the past several decades, with the 1990s and the 2000s shouldering the majority of the dry years (NOAA, 2011). This lack of precipitation caused farms and homes to be abandoned for a future in the growing city of Damascus, and Syria moved closer to the flashpoint of the defining conflict of a generation.

![Figure 1: A comparison of winter precipitation 1971-2010. This figure is in comparison to the overall period from 1902-2010. Image Credit: National Oceanic and Atmospheric Administration](image)

**Unrest and Civil War**

During the three years prior to the onset of the civil war, farmers began to move from their drought-ridden farms into urban centers, looking for some form of work.
Population increased in the Damascus and Aleppo areas as well as in the other urban centers (Hinnebusch and Zintl, 2015). As wells ran dry across the nation, the food supply was found empty as well. Foreign aid was needed to meet the demand for food in Syria but could never be sufficient. Syrians went hungry while the Assad regime could do little to mitigate the problem. Hundreds of miles away, in Tunisia, a man committed the ultimate act of protest and desperation. Had he suffered with the thought that in a food-poor, authoritarian state, wrought with corruption, his future was bleak? We can never know his exact thoughts, but we do know that something in the young fruit vendor snapped. In full view of a street market Mohammed Bouazizi set fire to his own flesh (Fisher, 2011). His death was slow and painful, a fate that none should ever suffer but it was a death to which he had committed himself in protest of a system that would never allow him to move forward. Across the Middle East and North Africa, something was awoken, a hope, a desire to purge corruption, and thus as 2010 yielded to 2011, the Arab Spring broke loose.

Protests began in Syrian cities in February of 2011. Syria suffered under much the same fate as the other states caught up in the Arab Spring. Food was scarce and thus expensive, human rights lagged behind much of the world, and yet regimes had stayed in power for decades. It is hard to say for how much of the unrest in Syria Bashar al-Assad was responsible. There had always been underlying objection to the Assad regimes, but many had thought improvement was on the horizon. There did however exist the fact that reform had been promised but not delivered. Perhaps if the regime had moved forward with the reform Syria needed, the Arab Spring would have spared Assad. As it is Assad’s reputation on the world stage as a tyrant stems mostly from his response to the Arab
Spring. It was in response to protests in his streets that the tyrannical authoritarian in Assad’s blood came out in the worst way imaginable.

A major escalation point was reached in mid-March of 2011 when regime security forces began to fire on protesters. Protests over economic disadvantages and demands that Assad step down from the office of the presidency devolved into riots when the government began injuring and even killing protestors. Assad’s actions as the Arab Spring hit Syria confirmed the image of him as the oppressive authoritarian and protests only expanded in response to his attempts to quash them with violence. Protests were made up of numerous groups within society, but many of them shared socio-economic hardships born of unemployment and drought (Abboud, 2016).

As protests got more extreme and responses became more violent, the movement spread to nearly every aspect of Syrian society. When soldiers of the Syrian army defected in protest, some formed against the government, creating the Free Syrian Army (FSA) and initiating a catalyst for the organization of militant groups (Abboud, 2016). As the FSA fought back against government forces, more groups began to militarize. Kurdish separatists began to form up in response to the rapidly devolving political situation and Islamists, initially part of the peaceful protests in the urban centers, began to arm themselves. The collapse of order created the perfect opportunity for a terrorist organization in neighboring Iraq to move across the Syrian border to begin recruitment and territorial expansion. The Islamic State of Iraq and the Levant, commonly referred to by a number of acronyms including IS, ISIL, and ISIS was born out of an al-Qaeda satellite group but grew into something arguably much more dangerous and extreme because ISIL had the capability to function as an army rather than as a terrorist band.
(Cronin, 2015). As ISIL gained ground in Syria and absorbed Islamists into their ranks, the civil war began to enter its height and full scope. The war can be seen today as a struggle mainly between four factions, the Syrian government, still under the rule of Bashar al-Assad, the Kurdish separatist forces, the Syrian Rebel forces, and what remains of ISIL. The fact that all four of these groups are fighting one another is part of what makes this conflict so convoluted and disastrous.

**Syria as a Proxy War**

As the war in Syria has raged on, outside influence has begun to take hold. Since very early in the conflict, the Syrian government has been backed by the Vladimir Putin regime in Russia. Kurdish rebels are currently backed by the United States, with the Syrian Rebels receiving support from Turkey. Over the past couple of years, ISIL has been severely beaten back and now controls a comparatively small fraction of the overall Syrian landscape and has been forced out of the major population centers. Still, there are multiple factions and none are allied. Recent clashes have seen Turkish forces in combat with Kurdish separatists backed by the United States. Two nations that are formally allies are in conflict with each other through a foreign war. At the time of writing the United States and its allies have recently attacked the Syrian government directly and in open disregard of the Russian support of the Assad regime. The implications of the war in Syria on the international stage seem to be unearthing vestiges of the proxy wars of old that took place during the Cold War. The scope of the conflict from the geopolitical perspective is not the primary focus of this project, but it would be irresponsible to ignore it completely.
The Syrian Refugee Crisis

To date, 5.4 million people have fled the Syrian crisis (United Nations High Commissioner for Refugees, 2018). Placing this number into perspective, the population at the time of the outbreak of Civil War was between 20 and 21 million (CIA World Factbook). Much of the debate around global response to refugee crisis revolves around the Syrian conflict. The influx of refugees has been cited as a reason for the rise in nationalist parties across the world in recent years. Thus, the Syrian Civil war has made an impact all around the world.

Certain countries have accepted far more of the refugees than others. Neighboring Turkey and Jordan and Lebanon have taken in most of these refugees, Turkey accepting the most at 3.3 million to date (United Nations High Commissioner for Refugees, 2018). The sheer scale of this refugee crisis will later highlight the point about climate refugees of the future and how the global community can respond to this crisis.

The preceding section of this project has been intended to provide context around the dire situation in Syria. It naturally follows that this contextual background is by no means complete. Truly capturing the scope of Syria would require significantly more attention and cover a history spanning several thousand years. The major focus of this section has been the development of the modern Syria crisis and the ascent of the current authoritarian regime of Bashar al-Assad. It is with this background in mind that we now proceed to take a closer look at how the crisis began to develop due to water scarcity as a result of climate change.
CHAPTER IV: TROUBLE ON THE HORIZON

Drought and Food Shortage

Years before the Syrian civil war began, news of severe water shortages in Syria began cropping up in the international media. A short news brief published in the BBC in April of 1999 gave a simple message: the water supply for Syria’s capital city was drying up. During the few weeks prior, rain had failed to maintain the spring from which most of Damascus’ water originated (BBC World News, 1999). The short report would have seemed relatively innocuous at the time as Syria was experiencing the drought along with a huge geographic portion of the Middle East. A little over a year later, the same publication ran an article describing food shortages in Jordan and Iran due in part to the low levels of the Tigris and the Euphrates Rivers (BBC World News, 2000). This article makes note of the food scarcity resulting from an inability to farm, though it makes no mention of food scarcity in Syria itself. In fact, the aforementioned drought is not the drought that was occurring in the lead-up to the Syrian civil war but was one in a series of many droughts which have cropped up for over two decades and serves as a precursor to what was to come. It is noteworthy also to point out that what defines a drought can be relatively ambiguous, especially across time scales. Therefore, while the Middle East droughts of the late 1990s and early 2000s are split into different climatic events, the whole time period could be considered one of abnormally dry conditions. Though the drought that began in the 1990s, did technically end in the early 2000s, another drought began in 2006 and lasted until 2010, with smaller droughts interspersed throughout the period in between.
Using what have been defined as the periods of drought, it was the 2006 to 2010 drought that would be identified as a catalyst for war. An Al Jazeera article published in 2009 indicated that, amid harsh drought conditions, Syria was unable to produce the food necessary to feed its population and in fact could not produce enough food to feed even fifty percent of the country (Al Jazeera, 2009). The severity of this drought drove rural inhabitants on the order of hundreds of thousands to leave their homes in search of more manageable situations (Sinjab, 2010). It is here that the first domino would seem to fall, though not simply because of the addition to the population of the urban centers. With the drought and subsequent shortage of farmers in Syria’s rural areas, the country began to severely under-produce food.

The trend of low food production continues into the years of war with the wheat crop in 2014 for example yielding less than half of the estimated need (Morris, 2014). It is during the years of war that we begin to see a positive feedback loop taking shape. The drought and subsequent shortage of food led to an unstable populace from which protests emerged. As protests became larger and more vocal, the response to the protests followed suit. As more protestors were injured and killed the situation went from one of protest to one of extreme violence (Marsh, 2011) and ultimately to civil war. As the war escalated Syria became progressively less stable and less able to provide for itself. Crop production is continually low which is seen to be due in large part to the war. While it is true that the war caused a drop in agricultural production, and it seems intuitive that such would be the case, the events leading up to the war suggest that war and food shortages contributed to causing one another. Continued difficulties in feeding the population create a challenging environment for peace.
Drought could thus be a contributing factor to the prolonged nature of the conflict. It was previously mentioned that the food shortage was quite great in 2014. What has not yet been touched upon was the fact that the period 2013 into 2014 saw continued drought. As the conflict has persisted, the drought has done the same and thus to food shortage has become worse, making peace a difficult proposition (Al Jazeera, 2014). The drought and food shortage in Syria seemed to have gone largely unnoticed by the global community at large in the buildup period to the civil war, but as the war has progressed and more news outlets have begun looking into the internal strife in Syria, food shortage is becoming a popular topic for discussion in a great many news sources. The 2014 food crisis has been reported on to a much greater degree than that of 2009, and thus it may appear that the food shortage is simply a result of the war, rather than a contributing factor when in fact, Syria had been in a crisis of food shortage for quite some time before the war truly began.

As war continues, water scarcity becomes more of a problem. Over the past few years, Syria in general has seen a severe drop in available drinking water. Droughts tend to be felt first in agricultural production because with as many people there are that need drinking water, an astounding percentage of total water usage goes into agricultural production. An estimated seventy percent of global fresh water goes to agricultural use, compared to only about ten percent used in homes (Global Agriculture). As the war rages on in Syria however, we see water shortage continuing to be a driving factor in a worsening situation. Aleppo province in 2016 saw a depletion of water resources due in part to irresponsible usage of the Euphrates Dam—Syria’s largest fresh-water reservoir—by both insurgents and government forces (Chudacoff, 2016). Aleppo has been hit particularly hard by resource shortages. The images emerging from Syria’s largest city
have been truly horrifying. Conflict did severe damage to much of Aleppo’s water infrastructure, leaving many without access to any water resource. In conjunction with the water depletion from the Euphrates Dam, the water pipes of the city had been bombed out (Serhan, 2016). Aleppo has since come under some measure of control because it was retaken by the Assad regime.

Human-interest stories about the plight of Syrian civilians suffering in thirst have circulated widely over the past couple of years and these stories are rooted in the relationship between the Syrian conflict and the water shortage. The unfortunate reality is that water shortages are not going to go away even if the Syrian war ends. Water in the region at large is already scarce and could be a factor in driving emigration whether or not war is a result. Here is a question to ponder though: are regions experiencing severe water shortages doomed to conflict in the form of a resource war?

Resource Scarcity and the Arab Spring

The Syrian civil war has been the longest continuous conflict stemming from the uprisings known as the “Arab Spring”. One argument against the importance of water in the Syrian conflict could be that the Syrian civil war rose primarily out of the general atmosphere of the Arab Spring which began in North Africa and was not directly related to drought and water scarcity. It is therefore prudent that we examine whether water had any role to play in the Arab Spring at large.

An article published in *Scientific American* in 2013 gives interesting insight into this very idea. Perez (2013) points out that with water and food scarcity being a constant concern in much of the Middle East and North Africa, these regions import a large
amount of the food they consume. As drought was widespread across many of the world’s most agriculturally productive countries, there was a global food shortage, which Perez identifies as a possible catalyst for the Arab Spring (Perez, 2013). The idea lends itself to the argument that civil unrest and uprisings are more likely to occur when fundamental resources such as food and water become scarce. Perhaps then it is possible that it is not necessary for water scarcity to occur in the conflict zone itself if the effect from the peripheral zone is great enough. The Arab world’s dependence on imported grain arises again in a Boston Globe article from 2015 (Cambanis, 2015). The author, Thanassis Cambanis, introduces the possibility that uprisings could occur again at the next drought or food shortage. This is another intriguing idea because the author refers to a rebellion of the hungry as the most dangerous for the governing body. The reason for this is perhaps that a change in governmental leadership or structure will only placate the populace to the point where the lives of the people see improvement. If hunger persists, there would be little to reason for civil unrest to end.

The idea that food scarcity and high food prices serve as a driving force for the Arab spring has been used to interpret the uprisings in both Tunisia and Egypt (PBS News Hour, 2011). Expanding to the region at large, it is noteworthy that the nations that experienced civil unrest during the Arab spring are food importers, but not food exporters (CIA World Fact Book). Thus, while they are able to meet a small amount of the demand for food domestically, they rely heavily on imports from abroad. Therefore, the large-scale drought in 2010 which decreased global wheat production played a large role in creating food scarcity and driving up food prices in the Middle East and North Africa in
the months leading up to the Arab spring, forming a correlation between not only local, but global droughts and the Arab Spring.

Overall, much in the way that water shortage though not a singular cause for the Syrian civil war must be considered as a factor, it would seem that while food shortage and drought or not solely responsible for the Arab Spring, they need to be considered as contributors. Here we will begin to examine the problem on a broader scale and expand beyond the Middle East and Northern Africa to demonstrate the global nature of this problem.
CHAPTER V: A DANGEROUS FUTURE

A War Continues

As the war in Syria enters its eighth year, there is little hope for resolution on the horizon and the possibility of escalation seems very real. Whatever hope of reform the Syrian people had when Bashar al Assad ascended to power is now a distant memory. The war has hardened Assad and made him into little more than a criminal in the eyes of much of the world. At this point, Assad has no choice but to win the conflict and take back Syria in its entirety for if he loses his rule his life will be in jeopardy. The Arab Spring in Libya resulted for Muammar Gaddafi in a brutal death at the hands of rebel combatants. Assad is likely in a similar sort of situation; if captured he would risk the same sort of gruesome death, or a highly public trial, which would in all likelihood result in a sentence of death or life imprisonment. Assad’s usage of chemical weapons in particular has left him few paths forward. The Syrian government has gained ground recently but does not control nearly enough ground to think realistically the end of the war is near. ISIL has been beaten back, but Kurdish forces control a vast area of land and have international backing. Rebel forces control less land, but are backed by Syria’s significantly more powerful neighbor, Turkey. The situation changes with each passing day, and the possibility of an escalation of international involvement is not at all out of the realm of possibility.

With regard to the questions of drought and water scarcity, it must be said that correlation does not imply causation, however to ignore the fact that the Syrian Civil War arose following a period of drought would be negligent. The likelihood that a twenty-year drought played no role in facilitating the conflict seems slim at best. When farmers fled to
the population centers is search of work, they added another layer of competition to a job market already had far too little supply to fulfill demand. Poverty was rampant in Syria before the war broke out and an inability to access food brought further stress.

Resources such as food and water are essential to all human beings. One can be pushed only so far before retaliation occurs. Drought causes food scarcity; prices increase and the barrier to feeding oneself and one’s family become insurmountable. Combined with years of authoritarian rule, ethnic tensions, and religious extremism, the Syrian conflict was launched.

Drought patterns as a result of climate change do not bring good news to the Syrian conflict. The already historic drought may last for years to come. There is no way of knowing when it will end. After two decades of drought, there is no water table left. As such there is no telling how much rain would need to fall before Syrian would be able to grow enough crops to feed its people and provide enough drinking water to quench their thirst. Without meeting the basic human needs of the people, is there any chance the government can end the war? Even if the war did end and Assad stayed in power, what would happen then? Drought would continue and the whole cycle could start over. In short, there is doubtful to be peace in Syria while Assad still resides in the presidential palace in Damascus. As the pattern of climate change that we have seen over the last several decades continues to escalate, the Syrian water crisis will likely only get worse. There is no telling how many refugees will have fled Syria when this war finally ends. What is certain is that Syria itself will never be the same again. Some measure of the damage done by this war will be permanent, just as what is today Syria was shaped by the roles of the Byzantines and the Romans.
The World at Large

The war in Syria is many layered, and it is worth stressing again that the conflict is by no means due to water scarcity alone. It can be said, however, that water scarcity has played a role in the timing and scale of the conflict. What we must discuss now is the fact that Syria will not be the last place on our planet to experience water scarcity and the resultant problems, so it is necessary that we prepare for the future. We must at the very least have an idea of what is to come.

Populations of many African countries, particularly in urban centers, are increasing while resources are depleting (Hendrix and Saleyhan, 2012). Unfortunately, many African countries have situations similar to those in Syria and could collapse into similar chaos. Years of European oppression and rule have plunged much of the continent into conflict and poverty. Water scarcity is already a problem here, but the unfortunate fact of climate change is that everything can get worse. There are certain countries that are at extremely high risk of devolving into a crisis similar to that, which has gripped Syria.

Eritrea lies in a drought prone region and has experienced both drought and food shortage in recent years (Plaut, 2011). Corruption in a government that has stayed largely the same since the 1990s completes the qualities necessary to classify it as a state at risk of climate conflict. Eritrea is in a region with several countries at risk of developing climate conflict. The widespread drought that has affected Eritrea has impacted many of its neighbors as well. Ethiopia, relatively stable in comparison to much of its surroundings, has experienced recent protests over oppressive treatment of its citizens.
and while it is likely at a less severe risk of devolving into a situation similar to that in Syria, it is worth mentioning as a place to watch. The same can be said of South Sudan and Somalia among others as the region is so overwhelmed by a long history of conflict and poverty that the potential for water wars exists in a very real way as droughts regularly grip the region.

Earlier discussion of the Arab Spring comes back into play here. While several governments were overthrown, and tyrants expelled or killed, those vacuums have often been filled with more of the same type of authoritarian rule. Egypt, despite the ousting of Hosni Mubarak, is still suffering under a corrupt government. Libya has little stability to speak of and has in the past few years experienced extreme problems with terrorism and militants. Such is the unfortunate theme of the states caught up in the Arab Spring. The movement proved to be a temporary surge and authoritarian military rule has once again gripped much of North Africa. The problems highlighted earlier persist. All of these countries are still vulnerable to the effects of droughts in food exporter states due to their low levels of domestic food production. The same factors that caused the Arab Spring are still factors of consideration today in assessment of the potential for these countries to experience climate conflicts.

The effects of climate change can be felt in drought, extreme storms, spread of infectious disease, and other potential human crises. The sad reality is that most of the population of Africa is at risk of climate change induced disasters. Whether by water scarcity or epidemic, millions of Africans could feel the full effects of climate change before the end of our lifetimes, yet Africa is growing in population. Population growth from a policy standpoint creates a problem because overstretching of resources could
result in faster depletion and a higher number of refugees if a crisis were to break out. Whether to escape generally adverse living conditions or conflict, the number of climate refugees is likely to increase dramatically over the next several decades. As of yet, there is no plan in place for coping with a refugee crisis on the order of tens of millions.

As large as the issue of climate-induced conflict and hardship is in Africa, it is in Asia that the problem may be most frightening. One of the most commonly known symbols of climate change is the melting of the glaciers. A sizeable portion of China’s drinking water comes from glaciers (The Guardian, 2017). When the glaciers disappear, so will the water source of millions of people. As a state, China is relatively stable; however, it is a country in the midst of an identity crisis, teetering on the edge of global capitalism and domestic communism. At some point in the future, China may well experience the same kind of civil unrest that met many of the states in the Middle East and North Africa. China, in recent years, has been investing all over the globe in spheres that would have been typically thought beyond their influence (Lawrence, 2011). While certainly at risk of climate conflict, China is arguably the country with the most foresight in the world in terms of long-term planning. Perhaps foreign investment will be the key to the survival of individual countries as we move into an increasingly water-scarce world.

India has experienced many droughts over its history and is a country that goes through incredible weather patterns with both drought and monsoon cycles. An article appearing in Reuters last fall, paints an alarming picture of India’s situation. The article was entitled “Heat and Drought Drive South India’s Farmers from Fields to Cities” (2017). The same scenario played out in Syria with farmers moving from their rural homes to places such as Damascus and Aleppo. At this point it should be stressed that the
political situation in India is significantly more stable than that of Syria or any of the countries that were caught up in the Arab Spring; however, it is also worth noting that India’s population is significantly higher than the population of any of those nations, and as such, the stress on India’s water resources could prove to be much greater. When considering the fact that the Indian borders are already among the most volatile hotspots in the world, the question of resource shortage becomes even more important.

Wars are not caused by a single factor; rather a whole host of factors often act as dangerous multipliers. Let us consider for a moment certain aspects of the geopolitical situation in Asia. India and China are two of the fastest growing countries in the world, both in terms of population and economics. These two nations are by no means allies; in fact, one of the stories that somehow failed to garner the attention of the world in 2017 was the fact that India and China actually had a military standoff during a border dispute last summer. The border between India and Pakistan can also be described as less than friendly, with tensions existing as long as Pakistan has been a separate state. The most frightening fact in all of this is that all three of the aforementioned states are armed with nuclear weapons. To this point in global climate conflicts, the threat of opposing sides lobbing nuclear bombs at one another has been nonexistent. If old conflicts in Asia are fueled by extreme shortage of water and other resources, it is possible that the resulting conflict would be a global war beyond the scope of those of the last century or indeed anything humanity has ever seen.

Let us pause for a moment here to consider the sheer scale of this problem. We are now talking about numbers on the order of billions. The potential for billions of people to experience water and food scarcity is a real possibility in the very near future.
Water is not a renewable resource. Someday, in the not so distant future, if we fail to change wasteful practices, we will not have enough fresh water to support the human population on Earth. Also consider that we have not even discussed the entirety of the western hemisphere with regard to this question. The risk of climate conflict would, in general, seem to be a more of a problem in the eastern hemisphere, both because of larger populations and because greater land area. The resultant conflicts if they occur, are likely to be significantly larger in scale.

Still, we must consider that there are already a great many conflicts in the western hemisphere and that climate has a role to play outside of conflict as well. Extreme storms have wrought havoc upon much of the Caribbean in recent years, and though conflicts on the islands are not nearly as likely as they are in Africa and Asia, the scale of human suffering cannot be overstated. Historic storms have brought horrifying effects to the people of places like Haiti and the United States territory of Puerto Rico. Puerto Rico’s identity as a part of the United States did not save its citizens from dying of thirst after so much of the island’s infrastructure was destroyed by Hurricane Maria. While not conflict related, this is still a climate issue and one that must be addressed.

Civil war has raged for decades in Columbia and corruption is rampant. Could intensity of weather patterns worsen this conflict? It is likely that only time will tell, however, climate conflicts do seem to be a greater risk in the eastern hemisphere simply due to higher population density and greater water scarcity. It is also noteworthy that most of the literature deals with conflict in warmer climates. We can make some inferences as to why that might be. Perhaps most importantly, populations tend to be larger further from the poles and closer to the equator; therefore, conflict is more likely at
the outset. Studies such as Burke (2009) would suggest that the reason for conflict in warmer climates is due to high temperatures, which could indeed explain why climate change may impact violence more in already warm climates. However, this does not explain why climate change would have more impact on conflict in the eastern hemisphere. This study proposes that a potential reason for this disparity would be water scarcity. The eastern hemisphere, simply by nature, is drier overall than the western hemisphere. There is more land area in warmer climates in the eastern hemisphere than in the western hemisphere. The land at the latitude corresponding to Syria and North Africa in the western hemisphere is the Southern United States, far less populated and far more politically stable and thus the chance for conflict is far lower.

Perhaps the most important takeaway from this project has been the changes in climatic events that facilitate conflict do not have to occur at the source of the conflict. Most of the literature on climate and conflict studied direct effects, such as whether or not rainy years led to more peaceful relations between groups. Future studies should expand these ideas to look at long-term climate trends not only locally but also internationally. If the conflict takes place partly due to absence of a resource, then the source of the resource matters. We thus work with expansive definitions of a resource war and also must recognize that the dangers of resource shortage will vary in degree. A possible example is the rise and fall of gas prices based on conflicts in oil-supplying countries. Naturally, people become annoyed, the economy suffers, and if it is an election year, politicians fear being voted out over a very visible inconvenience in day-to-day life. What happens though when the resource in question is one without which people cannot live? Drought occurring thousands of miles away resulted in scarcity of food in North Africa
and contributed to the onset of the Arab Spring. The economy is global in nature to the point where few goods can be seen as purely domestic in nature. Sometimes we fail to consider where our food comes from but when we stop to think about it, we realize that the banana we eat in Maine must, by necessity, have been produced far away, and was imported. A drought in the world’s largest crop producing countries has the potential to create a food shortage all over the world. Depending on the severity of the shortage this could result in anything from higher prices to empty shelves. As we have seen, the absence of food can serve as a catalyst for conflict. Conflict over essential resources will have no easy end.

Finally, we come to the issue of thirst. It may be surprising that it has been discussed so little in the context of the Syrian drought, but that is because of the massive amounts of water required for agricultural production. With regard to the three most basic of the human needs, we can use the survivalist rule of three to analyze future dangers. As human beings, we can effectively survive for three minutes without air, three days without water, and three weeks without food. Dealing with the first of these, we do not consider air to be a resource under imminent threat due to climate change. The composition of the atmosphere is such that we will likely run out of water before we run out of air to breath. To date, we have not experienced the full force of a global water crisis. How will humanity survive if our society comes to conflict over drinking water? While thirst certainly has been a problem during the Syrian Civil War, we have not seen it on the scale that we may in the future. If food scarcity can lead to conflict, it seems only reasonable that water scarcity will lead to conflict even faster. If people begin to die of thirst en masse, fighting over water would be a likely result. Any attempt to plan for
future global crisis management therefore must include multiple problems connected to water scarcity.

The Syrian crisis is extremely wide in scope but can be used as an example of the seriousness of climate change with regard to war and human suffering. Syria may seem to be an extreme case, but the potential exists for equally serious conflicts to arise in countries that are more populated or that are already at risk of war due to other factors. Does climate change alone drive conflict? No, no single factor ever drives conflict. Climate change did not cause the Syrian crisis any more than the assassination of Franz Ferdinand caused World War I. However, just as the Archduke’s assassination played a role in deciding when the conflict would arise and what some of the parameters would be, climate change played a role in facilitating the nature of the Syrian Civil War as it unfolded. With an eye to the future, we must learn to navigate this new and dangerous global landscape of wars over critical resources. The future may depend on it.
CHAPTER VI: CONCLUSION

No person, town, city, or country can escape climate change. As climate change escalates, our resources will be depleted. Conflict is likely at least as old as humanity itself. It is malleable, and changes across time scales and cultures. Resource wars may well be the way of the future the whole world over if we cannot manage to respond to climate change, for as we ignore the needs of the planet and the less fortunate, we doom ourselves to a future of conflict. This, our Earth, is the only place that we have to live. There is no backup plan, especially not for the poor and underprivileged. Alas, the poorest among us will be hit the hardest by climate change. Though it is the wealthy nations, such as the United States and China that have contributed most to the problem it shall not be those countries that shall feel the burden of climate change first. It shall be felt first in Haiti, in Bangladesh, and in places all over the world that can claim little if any responsibility for the crisis that is bearing down upon us like a freight train. If conflicts such as that which has unfolded in Syria are to be avoided, there are several critical steps that must be taken. It will be the responsibility of the global community at large to respond on a great many fronts to the challenges of the future, presented by climate change for the issue is global and there is no way forward without cooperation across the world.

First and foremost, the international community must treat climate change as the top priority of international security. Examining the causes of conflict will allow responses to be far more informed and appropriate. In the spirit of treating the problem at the source as opposed to at the symptom, the global community needs to step up its response to the threat of climate change. While a step in the right direction, the Paris
Climate Agreement was a baby step. If anthropogenic climate change is to be stopped the entire global economy needs to begin a rapid reduction in the use of carbon emitting fuels. The economy must begin a full conversion to renewable power. While seemingly an extreme step full conversion will need to happen eventually as fossil fuels, like water, are finite resources. Eventually, if we are to survive to our natural end as a species, we will need to completely abandon carbon-emitting fuels. It would be better to do this now, when the conversion does not accompany a full-blown energy disaster. We need to put a tremendous amount of resources behind this and through defense and security those resources will have a better opportunity to flow.

Moving to a more technical level, we must begin to enhance our desalination technology. While our freshwater resources are dwindling, desalination will allow us to extract potable water from the oceans, easing the stress on our freshwater resources. It is critical to note though that this must be done responsibly. Without foresight, the best solutions at one time could contribute to a problem later. The ocean seems infinite, but our history of resource mismanagement is far too long to be taken lightly.

Third and perhaps most importantly is the humanitarian component of these crises. If we are to adequately address this aspect of conflict, we must do a better job at educating the next generation. We fail the children of the world in so many ways. No child is born with prejudices toward another, those must be taught. If we can educate children to understand the threat of climate change, and the importance of empathy towards those affected, we will be in a far better place to meet the new challenges of the world. It is too late though to limit this education reform to children. Climate change is not the problem of our grandchildren; it was the problem of our grandparents. Whether
by studying, writing, speaking, activism, or simply leading by example, we must all move to create a society with a more global view. Empathy is the only way forward in a world losing its critical resources.

The Syrian crisis has the potential to last for a great many years. Eight years in, we are no closer to seeing an end to the factors that caused the conflict and if anything, we have seen hope of a peaceful resolution shrink as time has passed. Many of us have become desensitized to the news of the Syrian conflict, but if we take the time to look and remember we find that every day in the international news media at least one story of the crisis appears. With this in mind, we must remember the human cost of the conflict. Numbers dehumanize and to read that hundreds of thousands has died can never be as impactful as seeing the faces of those who suffer. The people dying every day in Syria are human beings with the same hopes and dreams as all humanity. It seems that every time empathy for Syria flares up around the world it is because of a horrible image of a child, sitting in the back of an ambulance covered in blood or choking on noxious gas. What we must all make an effort to remember is that the absence of the picture in the morning news does not mean that no children died that day.

So, when you take a cold drink of water or sit down to dinner, remember that there are those who are less fortunate, not only in Syria, but all around the world. Remember that the population of Syria is young and that millions of people in Syria and across the Middle East have never known a day without drought, or a day without fear. Think about what it does to a child to be born into war. Guilt is not the objective of mindfulness. It often feels as though we need to separate emotion from our thoughts in order to look at the world and see it as it is, but this could not be further from the truth.
Without our emotions, our thoughts are incomplete, and our ideas are ill informed. All of us should shed tears for those who suffer and die in Syria and elsewhere, but the best way we can respond to these injustices is to do our part to prevent them from happening in the first place. It is the responsibility of each and every one of us to take on the problems of our world. No one else is coming to stop the death and destruction. The hope of the world rests in our ability to open our minds and hearts.
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AUTHOR’S BIOGRAPHY

Edward Daniel Medeiros was raised in Rehoboth, Massachusetts, by his parents Daniel and Maryann. They brought Edward up emphasizing love and respect for the outdoors and the importance of reading. At the University of Maine, Edward was a double degree student earning a Bachelor of Science in Zoology and a Bachelor of Arts in International Affairs. Edward has a passion for teaching and served as a course facilitator in Honors 170 and as a Maine Learning Assistant in both Biology 100 and 200. He is also a proud member of the honors societies of Phi Beta Kappa and Phi Kappa Phi.

After graduation, Edward plans to take a year to enjoy the wilderness and catch up on his recreational reading before attending graduate school in pursuit of a PhD in Ecology and Evolutionary Biology, and later an MA in International Relations. Edward’s ultimate goal is to hold a joint faculty position teaching in both disciplines, advocating for the value of interdisciplinary work.