

2021

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### Recommended Citation

El-Khatib, Yara (2021) "The Impact of Climate Change on Security in the Middle East: A Review of the Literature," *The Yale Undergraduate Research Journal*: Vol. 2 : Iss. 1 , Article 16.

Available at: <https://elischolar.library.yale.edu/yurj/vol2/iss1/16>

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### Cover Page Footnote

I would like to thank my teaching fellow, Cole DeVoy, who continuously supported me on my work throughout the semester. I would also like to extend many thanks to my Professor, Nuno Monteiro, who inspired and encouraged me to challenge myself with this research question and others throughout my semester in his course and after. May he Rest In Peace.

# The Impact of Climate Change on Security in the Middle East: A Review of the Literature

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## ABSTRACT

The Middle East, which is already plagued by a series of security threats—such as terrorism, religious conflict, political instability, and more—is also an increasingly water-scarce and climate-vulnerable region. In this review, I examine the most recent and relevant literature on the debate of: how will, and how has climate change affected security in the Middle East? I examine five articles and one book that tackle this question, and I organize these sources based on the extent to which they argue that climate change is a determinant of insecurity in the region. While a few authors argue that climate change has or has not played a large role in the region's insecurity, most authors argue that the debate is multi-faceted and complex, suggesting that climate change is just one of many factors—though still an important one—associated with instability in the region. I conclude this review with a series of gaps in the literature, as well as avenues for future research.

## INTRODUCTION

In the last century, and especially in the past few decades, the globe has experienced growing effects of anthropogenic climate change, such as the greater increase in magnitude and frequency of extreme weather events (Feitelson & Tubi 2017, 40). One notable impact that will most disproportionately affect the Middle East region is the rise in water insecurity, including more frequent and more intense droughts (Feitelson & Tubi 2017, 40). This region is also a widely securitized one—as it is home to several ongoing violent conflicts, democracy deficits, socioeconomic struggles, multiple threats of terrorism, and more (Swain & Jägerskog 2016, 1). Given the Middle East's political and climate instability, it is crucial to consider: how will, and how has climate change affected security in the Middle East? There exists—albeit limited—literature on this debate, in which authors each add original value but all respond to the question of: to what extent will and has climate change affected security in the Middle East? Therefore, I impose a comprehensive framework on the literature, which organizes the debate around whether climate change has played a major, intermediate, or little role in implicating security in the region. Further, I weave in other relevant discussions within this broader debate and recommend three key avenues for future research.

## THE DEBATE ON CLIMATE CHANGE & SECURITY IN THE MIDDLE EAST

The five articles and one book examined in this review generally cover all of the major viewpoints on the debate regarding the extent to which climate change has and will affect security in the region. Specifically, the sources broadly argue that climate change is either a major contributor, an intermediate contributor or “threat multiplier,” or a minimal or indeterminate contributor, to insecurity. Further, many of the sources rely on the case study of Syria—in which

a severe drought from 2006/7-2010 preceded an ongoing civil war that began in 2011 (Kelley et al. 2015, 3241); this is most notably a product of insufficient data from other examples and the intensity of the Syrian drought and civil war.

### I. To What Extent Does Climate Change Affect Insecurity in the Middle East?

Of the sources examined, Kelley et al. (2015) take the most ambitious side of the debate; they argue that, in the Syrian example, “the drought had a catalytic effect, contributing to political unrest” that resulted in the civil war (Kelley et al. 2015, 3241). In order to reach this conclusion, the researchers developed and contributed to the literature a robust set of statistical models of rainfall and other environmental indicators in the region over time; from these models, they ultimately demonstrate how the downward trend in rainfall mirrors broader climate models on these impacts—showing how the drought was provoked by anthropogenic causes (Kelley et al. 2015, 3245). They then connected the drought to the 1) large migration of people from Northeast Syria to urban centers during the drought period, 2) increased stress on resources, and therefore 3) political unrest and conflict (Kelley et al. 2015, 3245). Kelley et al.'s (2015) study was ground-breaking because of its provocative claims connecting anthropogenically-caused drought as a major contributor to the civil war. Importantly, it also sparked a set of research that contributed different viewpoints on the debate—including backlash in certain cases.

The source that most directly contradicts Kelley et al.'s (2015) argument—arguing that climate change does not significantly implicate security in the Syrian example—is the Selby et al paper. (2017). The authors dismantle and refute three claims that Kelley et al. (2015) support: 1) anthropogenic climate change contributed to the pre-civil war drought in Syria; 2) the drought was responsible for the migration of up to 1.5 million Syrians into urban centers in the country; and, 3) this migration contributed to the increasing pres-

tures that initiated the civil war (Selby et al. 2017, 232). To refute each claim, the researchers find and illustrate methodological flaws in Kelley et al.'s (2015) models and analysis that disrupt the contingent impact chain upon which their claims rely. Selby et al. (2017) have therefore contributed to the literature an eye-opening skepticism and refutation of the prominent discourse—that climate change played any role in the onset of the civil war. They caution how researchers must, moving forward, “exercise far greater caution when drawing such linkages or when securitising climate change” (Selby et al. 2017, 232)—forcing scholars to rethink and reevaluate their methods for examining these climate-conflict interactions. Given the two extremes argued by Kelley et al. (2015) and Selby et al. (2017), these researchers have left considerable space for a series of various in-the-middle stances on this debate.

Many of the other sources—unlike Kelley et al. (2015) or Selby et al. (2017)—promote an in-between stance, one that urges a multi-faceted, multi-layered, and nuanced approach to this debate. To begin with, Gleick (2014) argues both that “water and climatic conditions have played a direct role in the deterioration of Syria’s economic conditions,” as well as that the severe drought was one of these environmental conditions that had “subsequent effects on political stability” (Gleick 2014, 331 & 338). Gleick (2014), unlike Kelley et al. (2015) however, substantially points to other contributors to the civil war, such as “long-standing political, religious, and social ideological disputes” and “economic dislocations from both global and regional factors” (Gleick 2014, 338). As Gleick’s article was written before Kelley et al.’s (2015) and before the other sources examined in this review, Gleick is the first to contribute to the literature such a nuanced examination of the role of climate change in affecting security. This is because it displays the various aforementioned contributing factors that complicate the role of climate change and drought as a driver of conflict. Furthermore, Gleick’s focus on these multi-layered causes for worsened security, though he supports the notion that the pre-civil war drought resulted from climatic changes (Gleick 2014, 337), elucidates that he promotes the notion that climate is an intermediate contributor to insecurity. Feitelson & Tubi (2017) take an even more complex approach than Gleick (2014) in arguing that climate change is an intermediate, rather than directly dependent, variable in predicting insecurity and conflict. Specifically, the authors argue that climate change only contributed to the onset of conflict when other fundamental factors, such as adaptive capacity predicted by a state’s economic and institutional structures, was compromised (Feitelson & Tubi 2017, 40). This argument is similar to Gleick’s (2014), but it crucially argues the following distinction: the other contributory factors to conflict—which both papers similarly attribute to various political, social, and economic instabilities—must be present in order for climatic and environmental factors to contribute to the onset of conflict. Feitelson & Tubi (2017) support their claims by contributing to the literature a framework that examines the various mechanisms by which climate change can affect security and conflict. Their framework incorporates three key factors—geopolitical settings (i.e. historical and ethnic contexts, water relations among neighboring states, etc.), the physical settings (in this case, climate change effects), and internal settings (i.e. economic and institutional structures, and adaptive capacity, of the state)—with which they model various pathways that may result in the outcome of conflict (Feitelson & Tubi 2017, 40-41). The researchers applied this com-

plex framework to both the 2007-2010 drought’s impacts in the Euphrates basin (shared by Syria, Turkey, and Iraq) and the Jordan River basin (managed by Israel, Jordan, and the West Bank Palestinians); it was through this application, and the outcome of no conflict in the Jordan River Basin amidst the drought, that the researchers came to their conclusion (Feitelson & Tubi 2017, 45-46). The comparison between these two basins was a unique and valuable contribution, as the other examined sources did not attribute nearly as much—if any—attention to the drought’s impacts on the Jordan River Basin.

Ide’s (2018) paper contributes less original argumentation because it simply reviews the literature on the Syrian example; further, its neutral/inconclusive stance on the role of climate change in affecting security in the Middle East leaves it in a ‘no man’s land’ in the middle of this debate. Notably, Ide highlights the need for greater evidence to argue that the drought contributed significantly to reduced livelihoods, or that this reduction in livelihood resulted in widespread migration; he further emphasizes the inability to prove that this migration, if drought-related, contributed to the onset of civil war (Ide 2018, 352). In doing so, Ide’s framework—for how climate change and drought may or may not have implicated the onset of civil war in Syria—is very similar to that proposed by Selby et al. (2017). Ide (2018) crucially ends with a presentation of the main shortcomings that exist within the current literature, which I further discuss later in this review.

Swain & Jägerskog’s (2016) book similarly does not produce strong arguments or conclusions about the role of climate change in implicating conflict, but they suggest the role of climate change as a “threat multiplier” to security—placing them in the middle of this debate as well. Further, the authors present a series of threats to the region’s security that will be furthered by climate change, such as water and food security, among others (Swain & Jägerskog 2016, 29-30). Beyond individual examinations of the threats to these types of security from climate change, the authors weave in how these threats build upon other security risks endemic to the region, such as the threats of terrorism, deficits in democracy, and complicated ethnic and religious dynamics (Swain & Jägerskog 2016, 1). Their analysis of different types of security is unique (and will be further discussed in the following section of this review), as most of the other examined sources solely consider security in the form of conflict. As such, the other sources failed to consider the various components of human and individual security, such as food or water security on the individual level, that climate change may provoke or worsen.

## II. Climate Change’s Impact on Security Before & During Conflict

Another, albeit smaller, question discussed in several of the sources and worth considering within this broader framework and debate is: what role does climate change play in affecting security in the region at different periods in time, such as causing or preempting insecurity, versus exacerbating already-onset insecurity?

To begin with, Kelley et al. (2015) and Selby et al. (2017) primarily consider the role that climate change plays in instigating or contributing to the onset of insecurity in the form of conflict; whereas, they do not explicitly consider or analyze how climate change may elongate or implicate the discourse of an ongoing conflict. Regardless,

their conclusions imply that, had they considered the role of climate change in affecting already-onset insecurity and/or conflict, Kelley et al. (2015) would have been more likely than Selby et al. (2017) to support that climate change has played a role in shaping the trajectory of conflict—like the Syrian Civil War. Second, Ide (2018) also does not give much attention to the role of climate change in affecting the discourse of conflict and insecurity after their onset; this is not surprising, however, as Ide (2018) assesses a set of literature that primarily focuses on the causal linkage between climate change and the onset of the Syrian civil war, rather than how climate change may have implicated the discourse of the war itself.

Meanwhile, the other three sources do in some capacity contribute to the discussion on how climate change may affect the discourse, rather than cause, insecurity—which again has been designated in most of these sources as consistent with conflict. First, both Gleick (2014) and Swain & Jägerskog (2016) begin to tackle the issue of water security in exacerbating conflict. Gleick (2014) notes the strategic advantage of targeting water infrastructure and systems during conflicts, as well as the use of water as a weapon in these conflicts; through these distinctions, he discusses the role of the climate-related reduction in water security as an avenue for exacerbating existent conflicts (Gleick 2014, 331). Swain & Jägerskog (2016) similarly address the role of water scarcity due to climate change as exacerbating existent conflicts. For example, they point out the Islamic State’s (IS) taking control over dams and water installations in Northern Syria and Iraq that were previously trans-boundary systems, and they note how this threat has been “linked to broader regional security politics” and “could foretell a catastrophe” if the IS stops or decreases the flow and/or destroys the dams (Swain & Jägerskog 2016, 76). Together, these two sources begin to tackle the role of climate change in prolonging and/or exacerbating existent insecurity through the pathway of reduced water security.

Lastly, Feitelson & Tubi (2017) approach this question in a more complex manner, but they uniquely present the reversibility of the climate-conflict interactions discussed in this review and in much of the literature. Specifically, the researchers examine the role of conflict in increasing a state’s vulnerability to climate change; they do so by considering the use of water as a weapon in the Syrian example, alike to Gleick (2014) and Swain & Jägerskog (2016), in order to come to this conclusion that conflict may increase climate vulnerability and causes greater environmental degradation (Feitelson & Tubi 2017, 47). From this conclusion, they further warn that this may in turn “contribute to the outbreak of violence or its worsening,” perpetuating a climate-conflict cycle (Feitelson & Tubi 2017, 47).

## AVENUES FOR FUTURE RESEARCH

### I. Expanding Data & Methods Robustness

While the literature covers a variety of methodologies and stances in arguing how climate change affects security in the Middle East, there are some key holes in this literature that should be used to shape future research; first, there is still much debate on the exact relationship between climate change and security in the region. It appears that a major factor for this poor clarity and lack of consensus is the poor quantity and quality of the data available on this topic. As a result,

a key avenue for future research is building upon and expanding the current literature to better resolve this data problem. Specifically, researchers should strengthen and overlap their methods and engage in dialogue across their methods. This first step will allow researchers to paint a more comprehensive, accurate, and nuanced picture of how climate change and security interact in the Middle East.

**“While researchers should attempt to improve the quality and quantity of their data where possible, they can better answer the question of how climate change and security interact by overlapping their methods.”**

To begin with, and in part due to the less expansive nature of the literature on this question, many of the researchers have pursued different—and often imperfect—methodological approaches on a small pool of data (notably the Syrian example), resulting in a wide variety of conclusions. For example, Kelley et al. (2015) come to their conclusions through a series of statistical models—thus a more quantitative approach, whereas Feitelson & Tubi (2017) take a strict qualitative approach with the development of their framework, and Selby et al. (2017) build their own models while also bolstering their analysis by pointing out the weak ethnographic methods (like testimonies) in support of the climate-conflict relationship. Beyond their already-different methods, these researchers often point out flaws in their colleagues’ analyses rather than draw upon the valuable merits and/or conclusions across these different methods; for example, Selby et al. (2017) spend a considerable effort disproving and pointing out the flaws in Kelley et al.’s (2015) analysis (Selby et al. 2017, 235). As there lacks consensus on the nature of the relationship between climate change and security in the region, however, it would be in the best interest of future research to collaborate more effectively across methods and overlap both quantitative and qualitative methods (Ide 2018, 352). Ide (2018) points out the importance of doing so, noting how “opportunities for fruitful and policy-relevant insights are missed due to a lack of mutual acceptance between proponents of various methods in the debate on drought and the civil war in Syria” (350). In sum, while researchers should attempt to improve the quality and quantity of their data where possible—and while understanding the difficulty of doing so in certain conflict-ridden regions in the Middle East, they can better answer the question of how climate change and security interact by overlapping their methods and establishing a greater dialogue between each other.

### II. Improving Theory Development and Engagement

A second and related hole in this research is the lack of theoretical engagement. The field of climate change and security, let alone in the Middle East specifically, is a newer one with much that is unknown about the present and future, but also about how these two factors have interacted in the past. This is not surprising, as the effects of climate change—unlike other security threats, like nuclear

weapons—are still considered to be an “emerging threat” to security (Swain & Jägerskog 2016). The sources examined in this review, therefore, rely considerably on contemporary cases (like Syria) and do not engage much theory related to how climate change interacts with and affects security; this further complicates, along with the diverse methods used, our understanding of how we might expect or predict climate change to implicate security in the future. In fact, Ide (2018) notes this flaw across the literature on Syria, noting how the “lack of theoretical engagement impedes the ability to learn from past debates or to inspire future discussions beyond the narrow question of whether drought contributed to the onset of civil war in Syria or not” (352). Therefore, and while some of the researchers discussed in this review, such as Feitelson & Tubi (2017), attempt to build a more theoretical framework, further research should attempt to develop—potentially using current understandings of security theory and what factors contribute to insecurity at the human, domestic, and international levels of analysis—and engage theory that attempts to detail the patterns through which climate change affects security in the region.

### III. Defining Different Components of Security

A third and final key hole in the existing literature is the interchangeable use of security and conflict. With the exception of Swain & Jägerskog (2016), every other source either exclusively used the term “conflict” when examining the topic at hand or appeared to refer to the terms “conflict” and “security” interchangeably. Whereas, Swain & Jägerskog (2016) present a series of considerations for security, such as international, national, and human security; and, within the conversation of human security, they refer to food security, water security, physical security, and more (29-30). Because the term “security” broadly encompasses all of these levels of security, the current literature’s use of the term interchangeably with conflict (or not at all) means that a whole component of what that security entails has been neglected.

This gap in the literature therefore paves the way for new research that extends to include the nuance of different types of security within the broader context of the question: how has (and will) climate change affected security in the Middle East? Specifically, this distinction of different types of security begs us to consider: how will/has climate change affected different types of security (i.e. national, international, human) in the Middle East, and how do these effects compare? For example, perhaps further research would prove the validity of Selby et al.’s (2017) claim—that climate change did not affect the Syrian civil war’s onset, meanwhile other research may determine that climate change nevertheless had a significant impact on human security. While these findings would deny the role of climate change in national security—such as the onset of a civil war, they would demonstrate the complex role of climate change in affecting security by highlighting its significant role in implicating human security—and maybe therefore national security in certain cases. Given these possibilities, shifting research towards this direction would allow for a more comprehensive and accurate understanding of the complex relationship between climate change and security in the region.

### CONCLUSION

In this review, I sought to examine the literature that tackles the

following question: how has and will climate change affect security in the Middle East? I examined six sources, structuring the debate through the question of: to what extent has and will climate change affect security in the Middle East? I first organized the sources into three categories, denoting whether they supported that climate change played a major, intermediate, or minimal/no role in affecting security in the region. Second, I considered an additional layer to the research question, which was: what role does climate change play in affecting security in the region at different periods in time, such as causing or preempting insecurity versus exacerbating existent insecurity and/or conflict? This allowed me to more fully discuss the relationships and arguments across the sources. Third, I presented three prominent avenues for further research on the topic of climate change and security in the Middle East, some of which were drawn upon by suggestions from the sources examined; these included: first, the need to expand data quality and quantity where possible, improve the robustness of methods, and promote cross-methods collaboration and dialogue; second, the need to improve theory development and engagement on this topic to better tackle the past, present, and future of the climate-security nexus; and, third, the need to research and define the nature of these this nexus for different types of security, such as international, national, and human security. Overall, there still exists much debate on the ways through which climate change affects security in the Middle East. However, these recommended avenues for further research will allow researchers to develop more nuanced, cooperative, and comprehensive conclusions on the subject; this will be crucial for understanding the nature of security in the Middle East in the following decades, especially as climate change impacts increase in magnitude and frequency.

### ACKNOWLEDGEMENTS

I would like to thank my teaching fellow, Cole DeVoy, who continuously supported me on my work throughout the semester. I would also like to extend many thanks to my Professor, Nuno Monteiro, who inspired and encouraged me to challenge myself with this research question and others throughout my semester in his course and after. May he Rest In Peace.

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