Global Environmental Change 44 (2017) 39–48

Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

A main driver or an intermediate variable? Climate change, water and security in the Middle East

Eran Feitelson[a,2], Amit Tubi[b,*,1,3]

[a] Department of Geography and the Advanced School for Environmental Studies, The Hebrew University of Jerusalem, Israel
[b] Department of Geography and Program in Planning, University of Toronto, Canada

ARTICLE INFO

Article history:
Received 24 August 2016
Received in revised form 15 January 2017
Accepted 6 March 2017
Available online xxx

Keywords:
Climate change
Drought
Conflict
Middle East
Euphrates River
Jordan River

ABSTRACT

The nexus between climate change and violent conflict is at the center of intensifying political and academic debate. Yet research on the extent and strength of this relationship remains inconclusive and much of the literature is largely empirical, lacking a sufficient theoretical underpinning. This study advances a conceptual framework linking climate change induced droughts and conflict, in potentially iterative relations. The framework is applied to two case studies displaying different responses to an extreme drought tentatively linked with climate change. To this end, we analyze the effect of the 2007–10 drought that afflicted the Middle East on the Euphrates and the lower Jordan River basins. While in the Euphrates basin the 2007–10 drought was followed by the outbreak of large-scale violent conflict in Syria which spilled over to Iraq, conflicts did not occur in the more water stressed Jordan River basin despite the tensions between the riparian countries. Using multiple sources the main factors that affected the responses to the drought in the two basins are identified and analyzed comparatively. The results show that the behavior of upper riparian countries and states' institutional and economic structures constitute critical factors affecting the likelihood of conflict. Most importantly, conflicts evolved only when fundamental factors, particularly adaptive capacity, have been compromised. Thus, from a theoretical perspective, we find that climate change is an intermediate variable, and should be analyzed as such, rather than as a major driver of conflict.

1. Introduction

The Fifth Assessment Report issued by the Intergovernmental Panel on Climate Change (IPCC) in 2014 is the first such report to dedicate a chapter to the human security dimensions of climate change (Gleditsch and Nordås, 2014). One of the factors underlying the decision to devote a chapter to this issue is the intensifying discussion and research regarding the extent to which climate change leads to conflict, whether internal or between states. This question has garnered significant attention in the past decade, leading to high-level debates in the Security Council in 2007 and 2011, and statements by many politicians (e.g. Kerry, 2015). The research on this question, however, is inconclusive (Adger et al., 2014; Gemenne et al., 2014). One strand of research utilizing historical data argues that climate has significant impacts on security, and leads to conflict (Hsiang et al., 2013; Zhang et al., 2011), and even societal collapse (Diamond, 2005; Ellenblum, 2012). However, other studies fail to find such conclusive evidence (Bernauer et al., 2012; Gleditsch, 2012), or even find contrary evidence whereby extreme climatic events reduce conflict (Adano et al., 2012; Slettebak, 2012).

There are several explanations for the inconsistency of results regarding the relationship between climate change and security. One, is the definition of the dependent variable – security. While some studies focus on the extent to which large-scale violent conflicts (usually defined as resulting in more than 25 reported 'battle deaths' per year) erupt, others look at the full continuum of

* Corresponding author.
E-mail addresses: msfeitel@mscc.huji.ac.il (E. Feitelson), amit.tubi@mail.huji.ac.il (A. Tubi).
[1] Permanent address: Department of Geography, The Hebrew University of Jerusalem, 91905, Jerusalem, Israel.
[2] Postal address: Eran Feitelson, Department of Geography, The Hebrew University of Jerusalem, 91905, Jerusalem, Israel.
[3] Postal address: Amit Tubi, Department of Geography, The Hebrew University of Jerusalerm, 91905, Jerusalem, Israel.

http://dx.doi.org/10.1016/j.gloenvcha.2017.03.001
0959-3780/

conflict and cooperation (Dinar, 2009; Tubi and Feitelson, 2016). The IPCC report takes a much wider view of security, taking into account cultural, economic, livelihood and migration dimensions (Adger et al., 2014). A second explanation relates to the multi-faceted impacts of climate change and the uncertainty regarding some of them (Adger et al., 2014). As each impact may affect different parties in different ways, it is difficult to ascertain the full effects of climate change. According to the third explanation, climate change effects may be mitigated by human actions. Hence, vulnerability to climate change, and in extension to climate-induced conflicts, is a function of both natural forces and societal factors (Döll et al., 2015). Only where several structural and triggering factors come together do conflicts turn violent (Ide, 2015). Finally, studies also differ in the focus and scale of analysis (transboundary, intra-nationally, regional or local) and in the methodologies used (large-scale quantitative studies vis-à-vis qualitative case study research).

Much of the research on the impacts of climate change is based on historical data. Yet, as the IPCC report warns, it is not clear to what extent do historical precedents have implications for the future, particularly due to the changes in human capacities in the Anthropocene age. At the same time globalization which underlies the Anthropocene may increase risks due to the increasing inter-dependencies, particularly for food imports (Dalby, 2009; Sternberg, 2013). Also much of the literature is largely empirical, lacking a sufficient theoretical underpinning (Gemenne et al., 2014). Particularly, the many quantitative studies linking climatic fluctuations with societal responses commonly fall short of explaining the correlations they yield (Buhaug, 2015; Seter, 2016). 'Climate determinism' and the insufficient consideration of social factors mediating between climate-induced stress and conflict have also been heavily criticized (Buhaug et al., 2014; Raleigh et al., 2014). Hence, there is a need for better conceptualized current studies that may shed light on the factors and causal mechanisms that may turn such stress to violent conflicts (Ide, 2015).

While most studies focus on the effects of climate change on conflict, some studies suggest that conflict increases vulnerability to climate change (Raleigh, 2010). Hence, conflicts, and particularly violent ones should be viewed also as explanatory variables. Thus, the relations between security and climate change should actually be viewed as an inter-relationship, whereby conflict increases vulnerability, thereby raising the likelihood that climate change will worsen a conflict. Yet, this inter-relationship has not been well spelled out.

One of the potential variables through which climate change may lead to conflict is an increase in the severity and frequency of droughts in arid and semi-arid regions. In such regions, droughts may amplify stress on water sources and reduce agro-pastoral productivity, thereby increasing competition over naturally limited resources (von Uexkull, 2014). There are several regions in which climate scenarios suggest that droughts will worsen as a result of climate change. Perhaps the most prominent of these is the Middle East region (Döll et al., 2015). Recent studies have argued that climate change contributed to the outbreak of the civil war in Syria (Kelley et al., 2015; King, 2016). Yet, these have been critiqued by Fröhlich (2016) for lack of sufficient attention to socio-political realities in Syria. Still, the Middle East, and especially the Jordan River basin, has often been suggested as a site where water-induced conflicts are most likely to break out (Brown and Crawford, 2009).

In this study we first outline a conceptual framework linking climate change induced droughts and conflict, in potentially iterative relations. We then examine the impacts of the extreme drought that afflicted the Middle East between 2007 and 2010, which was the culmination of a 15-year dry period, and whose occurrence and severity are argued to be an outcome of climate change (Cook et al., 2016; Kelley et al., 2015), on two river basins in this area which are viewed to be at substantial risk – the Euphrates and the lower Jordan River basins. This examination allows us to assess the importance of the iterative framework we propose.

In the next section we advance the conceptual framework, followed by the elaboration of the research method. Sections four

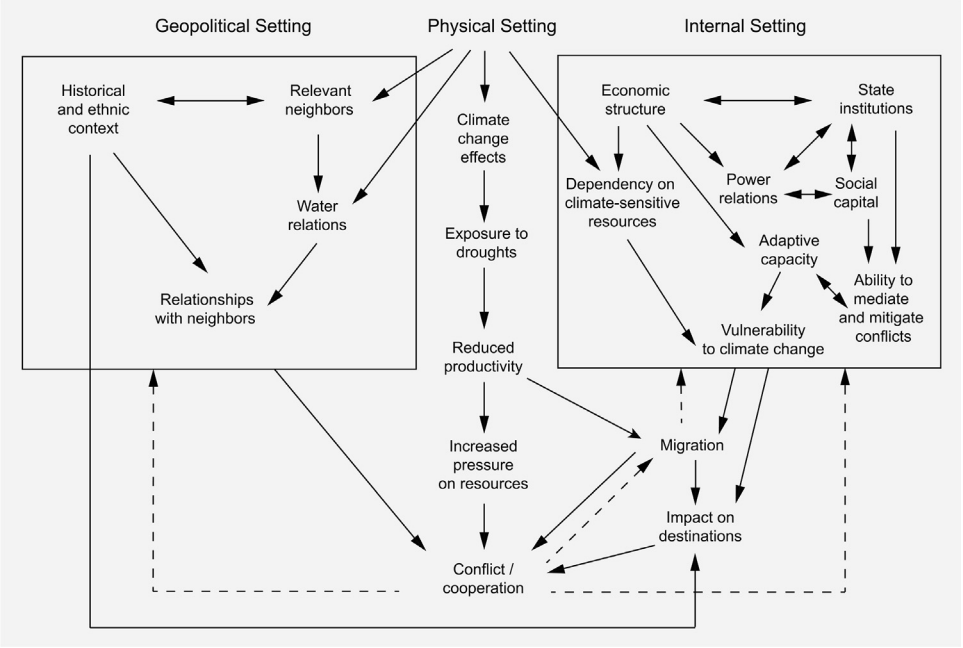

Fig. 1. Effects of droughts on the potential for conflict and/or cooperation. Dashed arrows illustrate potential feedback effects.