Conflict Prevention in an Era of Climate Change

ADAPTING THE UN TO CLIMATE-SECURITY RISKS

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Executive Summary

Today's violent conflicts are proving deadlier and more difficult to resolve than ever before. Over the past decade, the number of civil wars has nearly tripled, driven by a growth in transnational criminal networks, greater presence of radical groups in many settings and a willingness of international actors to support intrastate conflicts. There is also a growing recognition of the role of climate change in exacerbating today's conflict risks. Climate-related changes in transboundary water resources, food security, sea levels, flood risks and migration patterns are already impacting the stability of many States and will require large-scale adaptation and mitigation. As these trends continue to affect a growing number of countries around the world, United Nations Secretary-General António Guterres has explicitly placed climate change as a central aspect of the UN's prevention agenda, as have key Member States.

This report aims to support the UN and its partners in developing climate-sensitive conflict prevention approaches. It offers: (1) a literature review covering the major scholarship on the links between climate change and violent conflict; (2) in-depth case studies on climate-security dynamics in Bangladesh and Nigeria; and (3) cross-cutting conclusions and recommendations for the UN system.

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The main cross-cutting recommendations are as follows:

1 Analyse indirect impacts.

Looking for the direct connection between environmental change and conflict risks tends to simplify complex causal connections. As a wide range of scholarship has indicated, climate change creates mediated impacts, acting as a risk multiplier that affects socioeconomic conditions, livelihoods, and natural resources. These, in turn, may create new risks or heighten existing ones, often at a highly localized level that may be ignored by national level data. Using a human security lens may helpfully demonstrate how increased vulnerabilities to socioeconomic shocks caused by climate change may contribute to greater conflict risks. Drawing on national and subnational sources of information, and emphasizing the connections between the two, will be required.

2 Focus on governance, not just scarcity.

Much of the scholarship on climate-security falls into neo-Malthusian arguments, framing the issue as one of dwindling resources overwhelmed by exponentially growing populations. While there is strong evidence that climate change is indeed driving resource scarcity and greater competition in some areas, a more constructive and empirically grounded approach focuses on how resources are governed and distributed. Supporting regional, national and subnational programming that effectively manages resources, especially in highly vulnerable populations, should be a key component of the UN's in-country planning, which should also include vulnerability mapping.

3 Build up foresight capacities.

Across a wide range of cases, past trends are proving poor indicators of the rate of change today. In places like the Sahel, population explosion is combining with shifting agricultural practices and changing weather patterns, creating highly dynamic fast-moving risks. Better predictive capacities are needed in the short term (e.g. to anticipate shifts in seasonal rainfall and the potential for crop failure in Nigeria), but also for longer-term planning (e.g. the likelihood that sea level rises will affect nearly all of Bangladesh's population in the coming 50 years). Putting resources into more serious and medium-term foresight scenario-based capacities is crucial for the UN and its partners in order to be prepared.

4 Look for maladaptation and inequality.

Even the most well-planned climate response may have unintended consequences well beyond the immediate target. Yet, much of the government-led adaptation responses examined in the case studies in this report appeared to overlook the potential negative effects of programming. Harsh anti-grazing laws in Nigeria, for example, may limit the areas where farmer-herder conflicts breakout, but they also contribute to a deepening of the centre-periphery tensions that drive violence. More generally, government responses often tend to exacerbate underlying inequalities or are implemented without regard to extreme poverty and vulnerability. A "pro-poor" lens – advocated by some experts – would help mitigate those risks.

5 Adopt multi-scalar, cross-border responses.

Climate-driven change is occurring at global, regional, national, and highly local levels, all of which are related but manifest in very different ways. Indeed, all of the trends examined in these case studies are affecting regions rather than countries, requiring analysis and response that spans national borders. Unfortunately, the UN is highly reliant on national plans for its work and partnering mainly with governments for its programming. While recent reforms have emphasized the need for better regional strategic planning, this will need to be more meaningfully connected to the UN's work in-country and at the subnational level. Putting in place greater support for cross-border programming, which today is quite *ad hoc* and underfunded, will play an important role in settings that are experiencing large population movements in particular. It will also create greater connectivity between the UN's fairly abstract regional strategies and programming on the ground.

6 Build a common language for climate-security.

Climate-security discourse is inherently cross-disciplinary but has yet to develop a common vocabulary that all stakeholders are able to use uniformly. This is, in part, because many governments are concerned that an overt emphasis on security will push key issues of development and international aid into the background. More could be done to build a common language to describe the indirect and compounding effects of climate change on security risks, bringing together various disciplines and working towards agreement on terms. Importantly, scholars should find ways to describe so-called "technical" issues (e.g. changing water tables, riverine erosion and salinization) in ways that are more likely to generate political action. It will also be important to understand and shape the legal impacts of the language around climate change: terms like "climate refugee," for example, may describe the phenomenon of displacement due to climate-driven changes, but may also run afoul of existing refugee law.

7 Prioritize and bring climate-security into the broader climate discussion.

Within the UN, there has been some resistance to "securitizing" climate – a fear that a greater focus on security will distract and potentially disincentivize engagement on the global agenda to reduce emissions and prevent further global warming. However, as laid out in the Secretary-General's prevention agenda and the twin Sustaining Peace resolutions, prevention must be conducted in a holistic cross-cutting manner across the entire UN system. This means seeing the interconnected nature of climate change and conflict risks. Instead of worrying about potential interference between agendas, the UN should look for synergies between prevention and adaptation.

8 Strengthen knowledge management and build an evidence base.

Much of the work on the linkages between climate change and security is done by technical agencies, often in their respective silos and without making lessons learned available to others. To generate a shared understanding of climate-related security risks and effective response strategies, it is important to build an evidence base on climate change effects on security and collect good practices to close the policy-practice loop.

One challenge in the climate-security field is in translating the many disparate fields of work into a coherent framework of action. Here, the UN should adopt a modified version of the Center on Climate and Security's Responsibility to Prepare and Prevent (R2P2) framework as follows:

a.   **Routinization:** Effectively addressing climate-security risks requires that they be routinely analysed across political, development, and humanitarian work, not treated as an "add on" to other issues. Regular inclusion of climate-security indicators in planning documents and requirements for climate-security information in UN analysis would help bring the issue into the daily bloodstream.

b.   **Institutionalization:** Making climate-security part of the UN's institutional work does not require new layers of bureaucracy, but it does mean adapting current processes to allow climate-security considerations to become part of existing structures. For example, a climate-security aspect to the UN's Regional Monthly Reviews would be an important step. Multi-agency consideration of climate and would align with the Secretary-General's priority on cross-cutting prevention work.

c.   **Elevation:** Climate-security should be the responsibility of the most senior personnel within the UN. This could be achieved by including climate-security in senior officials' compacts with the Secretary-General, the terms of reference of Resident Coordinators and the Secretariat's reporting to the Security Council. Building on the Security Council's openness to hearing climate-security briefings on the Lake Chad area, the Secretariat should push for more frequent inclusion of the issue in briefings on other parts of the world.

> Prevention must be conducted in a holistic cross-cutting manner across the entire UN system. This means seeing the interconnected nature of climate change and conflict risks. Instead of worrying about potential interference between agendas, the UN should look for synergies between prevention and adaptation.

d. **Integration:** Climate change often affects security risks in indirect ways, through socioeconomic impacts, livelihoods, health, natural resource competition and access to basic goods. This means that climate-security cannot be isolated within a few departments but should be considered across the political, humanitarian, development and human rights work of the UN. The creation of the Climate-Security Mechanism (CSM) is an important step in that regard and should receive amplified support. Greater resources for the CSM, and possibly the inclusion of or more formalized cooperation with OCHA, would be helpful. Looking for greater inter-agency cooperation around climate-security at planning and programmatic levels should also be a priority.

e. **Contingencies:** The unpredictability of climate risks means that traditional scenario mapping is unlikely to accurately anticipate the kinds of change taking place. Accurate foresight is particularly challenging when climate is indirectly affecting security risks. This creates a significant danger that the UN's adaptation responses may produce unintended consequences. As seen in the case studies in this report, maladaptation can dramatically increase inequalities, directly fuel conflicts and may work to undermine many core governance goals. Based on improved foresight capacities, the UN could more clearly implement a conflict-sensitive approach to climate and a climate-sensitive approach to conflict prevention.

f. **Rapid response:** Predicting the impacts of climate change on security is extraordinarily difficult and tends to defy traditional linear models. In many cases, low probability/high impact risks are overlooked by the UN system, which instead focuses on the most immediately visible crises. It is therefore especially important that the UN and its partners are able to react quickly to new events, possibly by modifying existing early warning systems to be more sensitive to climate-related risks.

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Background

Today's violent conflicts are proving deadlier and more difficult to resolve than ever before. Over the past decade, the number of civil wars has nearly tripled, driven by a growth in transnational criminal networks, greater presence of radical groups in many settings and a willingness of international actors to support intra-state conflicts.[1] This, in turn, has contributed to historic levels of conflict-related displacement and far higher numbers of civilians caught up in violent conflict.[2]

There is a growing recognition too of the role of climate change in exacerbating conflict risks.[3] Climate-related changes in transboundary water resources, food security, sea levels, flood risks and migration patterns are already impacting the stability of many States and will require large-scale adaptation and mitigation.[4] Some have even warned of impending "climate wars," driven by a dramatic shortfall in key resources as the world overheats.[5] As these trends continue to affect a growing number of countries around the world, UN Secretary-General António Guterres has explicitly placed climate change as a central aspect of the UN's prevention agenda, as have key Member States.[6]

Recent UN reforms offer an opportunity for the UN and its partners to adopt conflict-sensitive prevention approaches, taking into account the role of climate change in the risk landscape. In particular, reform of the Resident Coordinator (RC) system demands that the UN be better positioned to prevent conflict, including through improved analysis, planning and coordination with other actors. Additionally, the creation of a Climate-Security Mechanism spanning three UN entities has created a centre of gravity and a small but dedicated set of capacities to help improve the analysis of, and response to, climate related security risks in the UN system.[7]

This report aims to support the UN and its partners in developing climate-sensitive conflict prevention approaches. It responds to Smith and Vivekananda's call for greater research into the indirect and local consequences of climate change on conflict risks, while also looking for comparative lessons across cases.[8] As such, it will be of direct relevance and utility to the UN field presences engaged in conflict prevention, stabilization and peacebuilding, as well as to policymakers within the UN and beyond.[9]

The report proceeds in three parts. **Part I** explores the main research on climate-security, focusing on findings that address possible links between climate change and risks of violent conflict. This will help equip UN actors with a broad but tailored understanding of the scholarship on climate-security as well as some important models for effective analysis. **Part II** offers the main findings of two case studies — Nigeria and Bangladesh — that explore the various ways in which environmental changes are affecting the risks of violent conflict, as well as a variety of other UN experiences. Here, the goal is to demonstrate to practitioners the applicability of some of the key models and the utility of climate analysis for the work of the UN in-country. **Part III** offers conclusions and recommendations based on a comprehensive literature review, interviews with a range of experts, an expert roundtable held in March 2020 and discussions with practitioners in the field.

I. The Case for Climate-Security

The dominant climate-security discourse aligns with the scientific consensus on the long-term changes to ecosystems resulting from increasing global temperatures. The global climate models used by the Intergovernmental Panel on Climate Change (IPCC) predict a continued increase in global temperatures over the coming 70 years, a process already driving droughts, desertification, greater variation in rainfall and severe weather events like hurricanes and typhoons.[10] The links between climate change and violent conflict are complex and often difficult to demonstrate in direct causal terms. This is, in part, because climate change (defined broadly as shifts in temperature and precipitation) tends to affect communities indirectly through environmental changes, such as sea level rises, floods, extreme weather and drought.[11] These, in turn, interact with a variety of other potential conflict drivers, including sociopolitical, structural, and economic factors, all of which form part of a complex interdependent system.

Exploring the causal links between climate and insecurity has generated significant and growing interest from academia, which has generally pursued an approach of measuring correlation between temperature/precipitation, rates of violent conflict and/or changes in conflict-related drivers.[12] While much of the literature remains embryonic or contested, some of the most important findings and emerging points of consensus are described below.[13]

For the purposes of this report, "climate-security" is defined as the ways in which climate change, directly or indirectly, affects the risks of violent conflict. The arguments in favor of a more traditional notion of security focused on inter-state violence are noted,[14] but this analysis has adopted violent conflict as the term that appears closest to the UN's conflict prevention usage. The definition differs from other uses of the term "climate-security," some of which are focused on socioeconomic well-being or a human security lens.[15] It should also be distinguished from the literature on climate vulnerability, which focuses more on the capacity for a given system to cope with climate change, or the research concerning loss of life from direct exposure to extreme weather events and natural disasters.[16] At the same time, this report acknowledges that the combination of high degrees of vulnerability, poor socioeconomic indicators and humanitarian needs are often crucial contributors to conflict risks — thus, the broader literature on climate change and vulnerability is also relevant.[17]

Direct causes of climate change on conflict risks

Since the early 2000s, a significant area of research has focused quite narrowly on the relationship between environmental factors and armed conflict.[18] Von Uexkill et al. have examined whether climate-induced droughts have increased the likelihood of violent conflicts to continue over longer periods of time.[19] Other research teams have pointed to climate change's impact on transboundary water disputes, considering whether changes caused by climate could increase the chances of inter-state conflicts.[20] Studies like these explore the direct links between climate change and conflict risks, an area of research with highly contested results. For example, studies showing high degrees of correlation between average rainfall and violence, or on average temperatures and interpersonal violence, have been criticized for describing correlation as causation.[21] As a result, scholarship has increasingly examined indirect causal links, where climate-induced socioeconomic changes may have an impact on the risks of violence.

The resource-conflict link

An important area of inquiry concerns how global climate trends cause increased competition over resources and consequently greater risks of violent conflict. Global changes in weather patterns are already having significant direct impacts on major resources such as drinking water,[22] the waters of the major rivers,[23] arable land[24] and forests.[25] In some cases, a fairly direct causal link between changing resources and conflict has been identified. Several studies have found that variations in rainfall have an impact on small-scale African conflicts over natural resources.[26] Burke et al. conducted a historical study demonstrating that higher temperatures were strongly correlated with increases in the likelihood of violent conflict over resources.[27] Butler and Gates found evidence that climate-related drought affects the availability of

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contested resources such as cattle and land and therefore contributes to risks of violence.[28] In contrast, Raleigh and Urdal found that in some cases climate-induced land degradation and water scarcity had only a negligible impact on resource driven conflicts.[29]

Much of today's climate-security research focuses on shocks to agricultural production in fragile settings, where droughts, floods, heat waves or cyclones may disrupt production or contribute to significantly reduced, leading to and food insecurity.[30] There is strong evidence in some settings that less rainfall is typically associated with lower yields.[31] One study found that the risks of violent conflict in Sahelian countries were correlated with changes in rainfall the previous year.[32] A study of sub-Saharan Africa found that areas experiencing sustained droughts were more likely to see civil conflict as economic grievances became more pronounced.[33] Johnstone and Mazo have even

argued that the effect of extreme weather on global food prices outside the Arab world was a proximate cause of the civil unrest that became the Arab Spring in 2011.[34] That finding correlates with other studies on the direct impact of food prices and malnutrition on conflict risks.[35] In some cases, diminished local agricultural output resulting from elevated temperatures cannot fully account for increases in violence, though may be a contributing factor.[36] Other studies have suggested that agricultural output and violent conflict are only weakly and inconsistently connected, even where economic shocks have strong social consequences.[37] In at least one case, evidence indicated that reduction in rainfall may have had a pacifying impact on existing tensions.[38] While this research helpfully speaks to the impact of drought and desertification on societies, it tends to suffer from an overreliance on neo-Malthusian assumptions about population growth and dwindling resources.[39]

Shifting populations

Another strand of research concerns the impact of global warming on pastoralism and the potential for greater farmer-herder conflicts. Maystadt et al.'s research on South Sudan found a direct correlation between rising temperatures and violent competition between the cattle herding communities, which depend upon flooding Nile waters for their survival.[40] Several studies on East Africa demonstrate that changes to vegetation and precipitation are a contributing factor in the escalation of pastoral conflicts, cattle raiding and competition over natural resources.[41] In the Sahel, a range of studies have built a strong evidentiary case that a combination of factors, including climate-driven desertification and erratic rainfall patterns are heightening farmer-herder tensions and contributing to increased violence levels.[42]

A similar vein of research concerns the links between climate change and migration. Migration, regardless of its cause, is considered a crucial national security issue for many countries.[43] Given that large numbers of people have already been displaced by climate change — particularly in low-lying coastal regions, but also in areas where climate change may be increasing violence levels — migration has been cast as one of the most important risks.[44] However, there is no necessary relationship between migration and insecurity and several scholars have criticized simplistic models that assume populations movements will destabilize receiving countries.[45] Summarizing the literature in this area, Brzoska and Fröhlich argue that migration is but one of many factors that may affect conflict risks and not always in a negative manner.[46]

Climate change as part of a complex socioeconomic system

Broadly, many of the findings about the direct causal relationship between climate and conflict are contested. Buhaug et al. argue that no robust causal link between increased temperature and civil war has yet been identified;[47] Adams et al. have suggested that much of the research has overstated the causal relationship between climate and conflict;[48] and Couttenier and Soubeyran argue that much of the mainstream findings misleadingly aggregate several contributing factors rather than singling out climate change.[49] These scholars do not contest a potential indirect causal role for climate change in driving conflict risks — indeed, they suggest there is one — but they point to the need for more rigorous approaches in defining that role alongside other factors.[50]

In part as a response to the difficulties of establishing direct causality, an important strand of scholarship acknowledges that climate change may be a contributing factor to violent conflict, but is of less direct impact than other socioeconomic and structural causes and not connected in the simple and direct way that is often portrayed.[51] Buhaug has suggested that ethnopolitical exclusion, poor economic growth and post-Cold War state collapse are better predictors of armed conflict than climate variability, though he acknowledges that climate change may play a role in exacerbating tensions.[52] Other studies have similarly concluded that political and economic dynamics are far more immediate determinants of violent conflict than climate change.[53] This accords with future-oriented modeling that suggests that the combination of rising temperatures and demographic trends are likely to create greater risks of violent conflict absent of improvements in political rights.[54] In some instances, climate

change could, in fact, interact in positive ways with underlying structural issues, potentially even reducing the basis upon which armed groups sustain themselves.[55]

While there are many competing views, systematic studies of the literature point to a fairly high degree of consensus that the relationship between climate change and violent conflict is a mediated one, interacting with a complex set of other variables that make direct causality difficult to establish with certainty.[56] Climate change thus exerts an indirect and conditional effect on conflict risks, often acting as a risk multiplier by increasing the gap between wealthier communities capable of adapting to new dynamics and poorer ones that already face greater risks of instability.[57] Climate related shocks to the economy and/or food production tend to be most acutely felt in poorer communities, exacerbating underlying grievances, reducing the opportunity costs for violence and imposing an overall downward pressure on economic development.[58]

Modeling climate-security

Attempts to model the relationship between climate and conflict offer some helpful concepts for understanding how complex systems respond to climate trends. For example, Devitt and Tol's model holds that climate change tends to negatively impact economic growth, which in turn increases the likelihood of civil war.[59] Here, climate change is part of a vicious circle, where both climate and conflict feed back negatively on the economy, hence increasing the future chances of violent conflict.[60] Other econometric models have likewise suggested a significant impact of climate change on economies that, when combined with the extensive literature on the links between economic development and stability, provide a strong analytic case for climate-security.[61] A similar negative cycle model by Vivekananda et al. argues that increasing fragility increases a community's vulnerability to climate change that, in turn, contributes to a decline in human security, a higher risk of violent conflict and still greater fragility.[62] These models align well with research concerning the likelihood of conflict occurring in areas with a combination of climate change, low governance capacities and pre-existing tensions.[63]

Vivekananda's model is especially helpful in the UN context as it points to the central importance of governance to the problem of climate-security. It acknowledges that conflict is part of a complex, interrelated system involving social, political, economic and climate dynamics.[64]

Moreover, it suggests that efforts to improve institutional capacities, address a population's basic needs and build inclusive governance may offer viable responses to the growing risks posed by climate change.[65] A compelling application of this approach is Adelphi's study of the Lake Chad basin, which demonstrated a feedback loop of conflict, poverty, human rights violations and climate change, all of which interacted together to create a growing risk of large-scale violence.[66]

Across a majority of the climate-security literature, the concept of vulnerability has become increasingly central.[67] Vulnerability can be broadly understood in two inter-related ways: the physical exposure to climate change (e.g. those areas most affected by drought and temperature increases) and the capacity of the affected community to manage new risks. In some cases, a community may face high exposure but have differentiated vulnerabilities across sectors. For example, a study in West Africa found that erratic rainfall had a far greater impact on agricultural production than on livestock because of existing coping mechanisms amongst herders for addressing water shortages.[68] Understanding the local capacities for adaptation and conflict resolution is therefore central to any analysis of vulnerability,[69] as is the concept of livelihood resilience in the face of climate change.[70]

Scholarship has also increasingly pointed to the role of climate change in exacerbating inequalities across societies as a key factor in driving security risks. The findings that climate change tends to increase the gap between wealthier and poorer communities at a global level[71] are mirrored by more localized studies indicating that poor, fractionalized and/or fragile communities are disproportionately affected by climate change.[72] Here, food production and prices are especially important, as poorer communities are especially sensitive to changes and may be driven towards violence when their survival is threatened.[73]

Emerging evidence as to the unequal impact of climate change across gender offers a potential lens for climate-security as well.[74] Broadly, there is a growing consensus that climate change is disproportionately impacting low-income, fragile countries, and typically the poorest and most vulnerable communities within them.[75]

Building on the literature around vulnerability and governance, there has been a recent trend towards understanding climate-security through a peacebuilding lens. Buhaug has explicitly called for a peacebuilding approach to climate-security based on findings that marginalized and poor groups bear the brunt of climate change impacts.[76] Similarly, recognizing that climate change has a disproportionate impact on those countries already experiencing protracted tensions and instability, Tänzler et al. propose that climate change adaptation and peacebuilding should be explicitly linked in the strategies of international and national policymakers.[77] Both Matthew and Krampe have gone a step further, proposing that international peacebuilding should adopt a climate-sensitive approach.[78] These findings are echoed by Barnett, who proposes a positive peace approach, framing peace as a form of resilience against the effects of climate change.[79]

The need for more empirics

This scholarship broadly points to the real difficulties in establishing clear causality when examining the climate-security nexus. Social, economic and environmental systems interact in complex and non-linear ways that resist simple cause-effect descriptions. But the scholarship also demonstrates a growing consensus that climate change is already acting as a risk multiplier on many fronts: increasing tensions, driving unpredictability and aggravating inequalities in ways that create new risks of violent conflict. It is worth pointing out that the accelerating pace of climate change will reinforce its impacts on peace and security in the years ahead and could potentially create entirely new types of risks that are not currently being considered.

What is needed, and what the remainder of this report endeavors to provide, is more empirical research establishing the specific and often highly localized ways in which climate change is driving risks of violence. The following case studies recognize that climate impacts are multi-scalar – taking place in communities but also at a global and regional level – and that detailed empirical work is needed to illuminate causal links.

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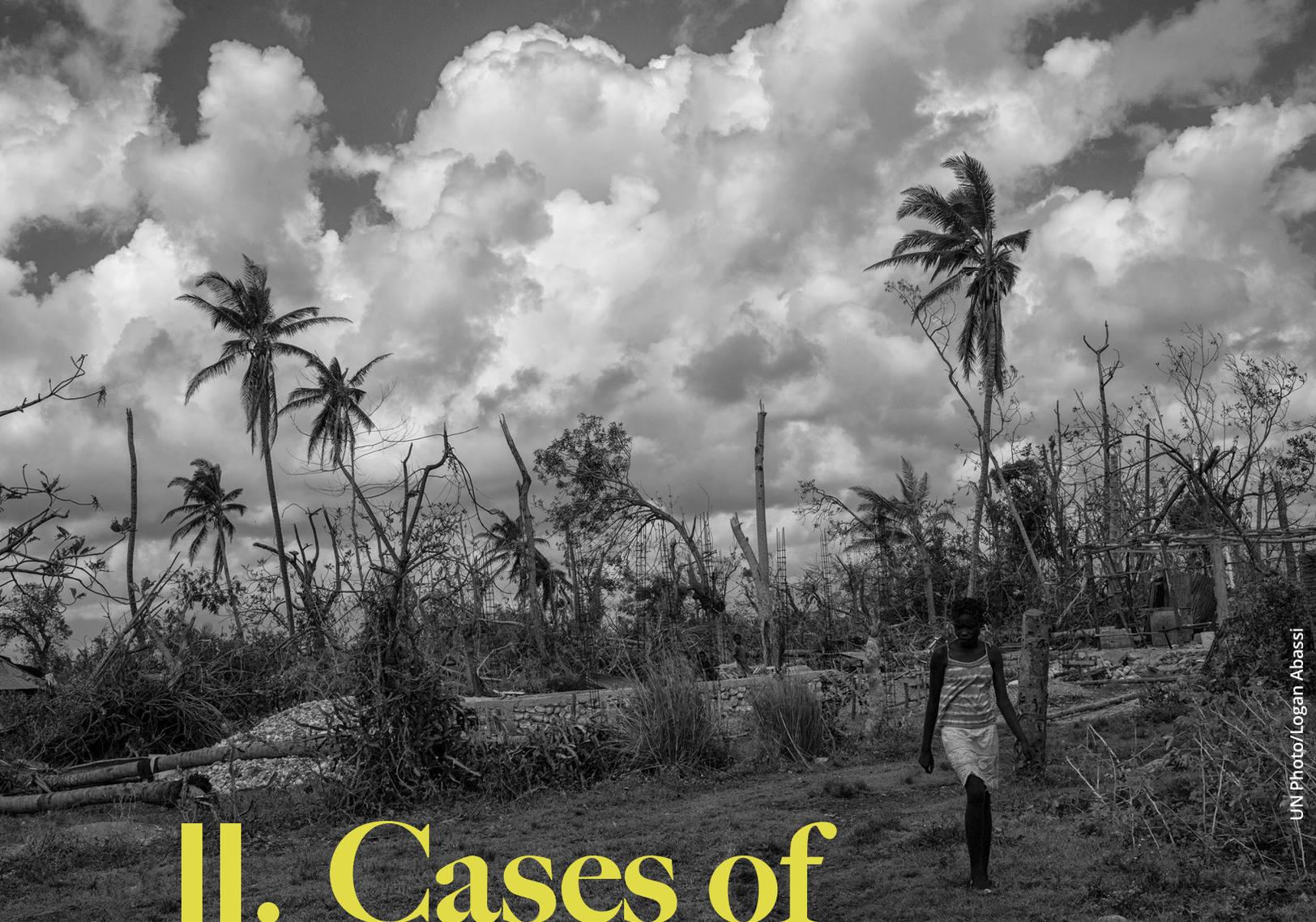
II. Cases of Climate-Security

The following two case studies on Bangladesh and Nigeria provide an empirically grounded basis for the policy recommendations laid out in this report. Each study also contains country-specific conclusions and recommendations. The findings of these case studies align with recent studies in a variety of other settings. For example, the Stockholm International Peace Research Institute (SIPRI)'s recent case study on drought and changing weather patterns in Somalia underscores the important ways in which shifts in livelihoods may be contributing to greater risks of participation in armed groups and/or violent criminal networks.[80] A range of forthcoming case studies commissioned by the UN Development Programme (UNDP)'s Oslo Governance Center indicate that many parallels exist between the findings contained in this report and settings in Chad, Tunisia, Kenya, Tunisia and elsewhere. [81]

Case 1 ———————————

Bangladesh

By Adam Day

Case 2 ———————————

Nigeria

by Jessica Caus

Bangladesh

By Adam Day

L ocated in the world's largest river delta, Bangladesh's fertile territory and coastal waters sustain an extraordinarily dense and fast-growing population. With a majority of Bangladeshis living in coastal and riverine areas, and a heavy dependency on fragile agricultural crops, it is also one of the most vulnerable countries to environmental shocks.

Here, climate change is already having an unmistakable impact. Rising temperatures have dramatically increased annual river flooding, displacing hundreds of thousands of Bangladeshis every year; higher sea levels are causing greater saline content in the groundwater; increasingly severe tropical cyclones have damaged arable land and exacerbated inland inundation; and more erratic rainfall has meant the agricultural sector has swung between droughts and floods. Facing the certainty of continued temperature rises globally, and already feeling the impact of regional tensions, Bangladesh's Prime Minister has called climate change an "existential threat" to her country.[82]

This case study explores the extent to which climate change may be impacting the risks of violence and insecurity in Bangladesh. Examining the major trends and scientific findings on environmental changes across the country, it investigates the extent to which those changes may be exacerbating underlying tensions, creating new disputes over resources or increasing the resort to violence in particular communities. The study also examines the Government's attempts to adapt to climate change in Bangladesh, asking how State-led adaptation efforts may have mitigated conflict risks. Drawing on interviews with in-country experts, the study describes the UN's strategy for supporting climate adaptation in Bangladesh, focusing on efforts that reduce risks of violence. The analysis suggests that the UN's prevention challenge in Bangladesh is intimately related to climate change, requiring tailored strategies to support inclusive and sustainable governance responses in the face of rapidly escalating environmental risks.

The study proceeds in four parts: (1) the impact of climate change on Bangladesh; (2) how climate-related changes are affecting the risks of violent conflict; (3) the response by the Government and the UN; and (4) lessons and recommendations.

Climate Change in Bangladesh

Bangladesh presents a complex ecosystem for climate change analysis, where macro-level events can play out in highly differentiated ways at the local level and where various factors interact in dynamic and unpredictable ways. Broadly, climate change is impacting the country in three interrelated areas: (1) riverine erosion and flooding; (2) the effects of rising sea levels, particularly salinization of the groundwater in littoral areas; and (3) increasingly extreme weather patterns, including cyclones. These climatic trends have combined and contributed to large-scale population movements from rural to urban areas, significant air pollution in cities, denuding of hillsides in contested territories of the country and a dramatic loss of livelihood for large numbers of Bangladeshis. This section explores the environmental trends as a first step in understanding how they might be contributing to increased risks of insecurity.

Changing rivers

Bangladesh is located at the world's largest delta, crisscrossed by hundreds of rivers that support the livelihoods of much of the country's population.[83] These rivers carry silt from glacial mountains southwards, depositing crucial nutrients for the farmers living along their banks. Flooding has long been a regular seasonal occurrence across much of the territory of Bangladesh, with unusually large floods taking place roughly every twenty years for much of the last century.[84] In recent decades, however, many of Bangladesh's riverine areas have experienced unusually heavy flooding, resulting in the erosion of enormous swathes of riverbank land.[85] The frequency of above normal floods has shown a steadily increasing trend over the past 50 years, including two floods considered "catastrophic" and four of them "exceptional."[86]

Heavier flooding is caused by a combination of environmental factors: significantly heavier rainfall during Bangladesh's rainy season, faster glacial melting at the source of major rivers and extreme storms and cyclones.[87] Increased rainfall in the upper basins of the major rivers, combined with temperature increases up to 2°Celsius is expected to increase river runoff from the Ganges by nearly 20 per cent in the coming decade, while several scientific projections suggest far more frequent catastrophic flooding across all the major rivers in the very near future.[88] There is broad consensus across studies of Bangladesh and the experts consulted for this report that these trends toward larger, more frequent flooding and riverbank erosion directly result from global warming.

The consequences of increasing riverbank erosion have been dramatic. At least 20 of the 64 districts in Bangladesh experience significant riverbank erosion and enormous loss of arable land annually.[89] According to one study, floods inundate between 20-70 per cent of the country's landmass each year,[90] while a single flood in 2007 submerged over two million hectares of cropland, destroyed 85,000 homes and caused more than 1,000 deaths.[91] More than six million inhabitants of the so-called *chars* of Bangladesh — the various sandbars, islands, and other temporary land areas in riparian zones — are increasingly under direct threat by flooding.[92] Poor, highly dependent upon arable land and with few viable coping mechanisms, the riverine farming communities of Bangladesh are extraordinarily vulnerable to the rise of floodwaters, especially the extreme flooding that is occurring more frequently now.[93] Recent reports have drawn a strong link between riverine erosion and poverty rates in Bangladesh.[94]

The result has been a dramatic surge in flood-driven migration across Bangladesh. During the 2007 extreme flood, for example, 3,000 people per day relocated to Dhaka and most have not returned to their former homes.[95] According to one major study, at least 400,000 Bangladeshis move to Dhaka each year, more than 80 per cent of whom attribute their move to environmental causes.[96] Displaced people now make up more than 80 per cent of the urban population of Bangladesh, the vast majority working in the informal sector and residing in insecure slums.[97] While other factors — such as the economic shifts of production to cities — may also play a role, climate change is certainly an important contributing factor to urbanization.

Rising seas

Bangladesh is an extremely low-lying country with most of its landmass within three meters of sea level and much of its population living in coastal areas.[98] Roughly 30 per cent of the country's cultivable land is in coastal areas, and thus, impacted by sea level changes.[99] Tidal data along the Bangladeshi coast indicates that sea

level rises are growing at a considerably faster rate than the global average.[100] During peak rainy season, sea levels swell still higher as huge quantities of water flow from the major rivers outward. This combination of geography and environmental change makes Bangladesh one of the most vulnerable countries in the world when it comes to the effect of sea level rises.

The impact of rising sea levels includes extreme inundation and flooding in coastal areas, coastal erosion and saltwater intrusion into ground and surface water, with impacts on coastal ecosystems. Saline intrusion can have immediate health impacts — for example, 20 million people living in coastal areas are affected by high saline levels in their drinking water.[101] It is already having a broader impact on the mangrove ecosystems that provides livelihood to millions of Bangladeshis.[102] In some parts of the country, saline intrusion has already penetrated more than 100 kilometers inland.[103]

Saltwater intrusion has a direct and negative impact on agriculture, a particularly troubling trend given that saltwater has already reached 26 per cent of Bangladesh's landmass and set to increase to 55 per cent by 2050.[104] A range of studies demonstrate significant agricultural productivity losses from rising soil and river salinity resulting from sea level change.[105] Rice paddies in particular — a major source of income and food security for Bangladesh — are extremely susceptible to changes in saline levels and are already suffering shortfalls due to saltwater encroachment.[106] Women and children face particular risks from saltwater erosion, including to health and livelihoods.[107]

As with riverbank erosion, increasing salinity is contributing to larger and faster migration from rural agricultural zones into major urban areas.[108] Forced to leave areas with low crop yields, farmers are unable to replace their incomes in rural areas and have overwhelmingly turned to cities to eke out an income. This also appears to be accelerating. Some studies predict a sea level rise of up to 125 centimeters within the coming century, which would effectively drown the southern half of Bangladesh if no action is taken.[109] When combined with other environmental changes — especially a drier

UN Photo/Kibae Park
Water is supplied by the military in Old Dhaka.

dry season — the salinity levels of much of the arable coastal land may presage the decline of the agricultural sector, with the overwhelming bulk of the population living in cities. The result could be a massive food security crisis for the heavily agriculture-dependent country.

Growing storms

Bangladesh is extraordinarily prone to extreme weather and is impacted by more than ten per cent of the world's tropical cyclones.[110] Cyclones create surges in the water levels along the country's coast, regularly destroying large numbers of residences and also contributing to the denuding of hillsides across the country.[111] Disastrous cyclones, such as those in 1970 and 1991, killed hundreds of thousands of people

and devastated the country's infrastructure.[112] Severe cyclones over the past ten years have killed thousands of people, displaced several million from their homes and caused billions of dollars of damage to crops.

The intensity of tropical cyclones globally is partially dependent upon water temperature, with warmer waters tending to generate more severe storms.[113] It is not clear from the scholarship to date, however, whether the *frequency* of cyclones is affected by rising sea temperatures, though there appears broad consensus that the intensity of cyclones has already begun increasing in some regions and is likely to continue.[114] Complicating matters, cyclones appear follow broad multidecade cyclical trends, often increasing in intensity and frequency in one region for a thirty year period and then returning to a lower rate.

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Across parts of the Bay of Bengal, there is some evidence that tropical cyclones have increased in intensity in the past decade.[115] This correlates with a rise in sea temperature of at least 0.5° Celsius, though other factors could also be playing a role.[116] A recent study predicts that while the overall frequency of cyclones in Bangladesh may decrease, the combination of greater severity and higher sea levels will almost certainly cause greater inland inundation and more damage to people and crops[117] This aligns with simulated models showing a significant increase in impacts of cyclone-driven surges as a result of water temperature increases.[118] Moreover, as the locus of cyclonic activity continues to shift eastward over time, new communities with fewer coping mechanisms are already being affected.[119] The extreme vulnerability of the Bangladeshi population to even temporary surges in water levels caused by cyclones means millions are at risk every monsoon season.[120]

Tropical cyclones, often in combination with riverine flooding and other factors, play an important role in migration patterns in Bangladesh. Evaluating the precise impact of extreme weather on migration is complex, given the number of other factors at play and the temporary nature of many population movements.[121] However, some studies have demonstrated a tendency for rural Bangladeshi populations to at least temporarily migrate to urban areas during severe storms.[122] Some may lack the means to migrate during a crisis — particularly women, who rarely migrate independently — meaning that often the most vulnerable must stay in highly exposed settings during a cyclone.[123]

II

The Impact of Climate Change on Violent Conflict Risks

Analysing the impact of climate change on the risks of violence in Bangladesh is complex. As other studies on climate-security have identified, often the relationship between environmental change and other dynamics is indirect and combined with a range of other contributing factors. Even the concept of security can be confusing — there is a tendency to conflate the notion of "human security" with the more specific issue of violent conflict, and also to assume that poor development leads inexorably towards greater conflict risks. This report recognizes the research findings about the linkages between poor human security and higher risks of violent conflict, particularly where socioeconomic grievances are based on high levels of inequality.[124] But it also acknowledges the shortcomings of the (often implicit) assumption that poor socioeconomic development, resource scarcity and related migration will drive people towards more violent modes of behaviour.[125]

The analysis in this report concludes that in many areas climate change is acting as a "threat multiplier," exacerbating existing tensions and increasing the likelihood that individuals and communities resort to violence, including: (1) increasing security risks in the Chittagong Hill Tracts and Cox's Bazar refugee camps; (2) heightening tensions along the India-Bangladesh border and within India; and (3) causing rapid and potentially dangerous urbanization. In addition, climate change is having: (4) a significant effect on the socioeconomic development of a country that already suffers from high levels of inequality, where the shocks of crop shortages and natural disasters are disproportionately felt by the poorest and most marginalized. These findings align with and amplify existing studies on climate-security in Bangladesh[126] and also contributes to the literature on the ways in which climate change is multiplying risks elsewhere in the world, including by increasing competition over scarce resources, increasing population movements and reducing key livelihoods that prevent individuals from more violent forms of survival.

In many areas climate change is acting as a "threat multiplier," exacerbating existing tensions and increasing the likelihood that individuals and communities resort to violence.

Security risks in the Chittagong Hill Tracts and Cox's Bazar

Along the easternmost border of Bangladesh, the Chittagong Hill Tracts (CHT) has long been one of the most conflict prone areas of the country. A complex network of mixed ethnic communities stretches from the CHT into Myanmar and northeastern India, with a history of occasional flare ups of violence, particularly between the indigenous people of the area and the broader Bengali population.[127] In the 1970s, an indigenous insurgency movement in the CHT challenged the Government and led to sporadic fighting over 20 years, resulting in a peace accord that included granting semi-autonomy to the region, although this has yet to actually materialize.[128] While a peace accord was reached in 1997, it has never been fully implemented, contributing to continued tensions and hotly contested land disputes across the CHT. Over time, this has contributed to far slower and more uneven growth in the CHT, with the region now being one of the poorest in Bangladesh.[129]

These conflict dynamics are intimately connected to the broader region, especially the continuing crisis involving the Rohingya ethnic group in Myanmar. In 1978, 250,000 ethnic Rohingya were violently expelled from Myanmar by the national army and some settled in the Bandarban Hills area. Other waves of Rohingya were settled in the same area beginning in the early 1990s, with hundreds of thousands arriving following the latest rounds of violence. There are some indications that the Bangladeshi Government has been unable to stop armed opposition groups from Myanmar to recruit and operate in the Bandarban Hills District, which has kept border tensions extremely high.[130] In addition, there are reports that Rohingya groups have been brought into existing intercommunal land disputes in CHT.[131] The large and unplanned influx of refugees into the area has contributed to rapid environmental degradation, including the denuding of large hillside areas, making

them even more susceptible to landslides during cyclones and floods. The population growth has placed huge pressure on the water table in Cox's Bazar, which was already deeply affected by environmental change for decades previously.[132] Since the Rohingya influx in late 2017, there has been a significant increase in political violence in the CHT.

The combination of decades of conflict, deeply rooted intercommunal land disputes and chronic underdevelopment has meant the CHT and Cox's Bazar are extremely susceptible to new shocks and also prone to violent responses to them.[133] Decades of deforestation have also left the hills with far greater exposure to landslides and flooding during the monsoon season, with high rates of crop failure recorded in recent years.[134] As described above, the combination of riverbank erosion, flooding, and increasingly severe cyclones is contributing to a reduction of arable land and further displacements in an already fragile region. Reports of increased land grabbing – including through violent means – are a signal that tensions have grown and are directly related to the underlying conflict dynamics that have existed there for decades.[135] These findings in the CHT align with other research indicating that climate-related loss of arable land and fishing have driven increased tensions amongst communities.[136]

Additionally, the growing rates of crop failure — due, in part, to severe weather and reductions in cultivable land — have a disproportionate impact on the impoverished areas of the CHT, where communities have long born a resentment against the Government for economic marginalization. Expert warnings of growing severe food shortages in the CHT point to a risk that the indigenous population in particular might again resort to confrontation with the Government.[137] Indeed, recent reports suggest that violence has already increased in some of the affected areas.[138] Given the long history of insurgencies and conflict in the region, some experts suggested climate-driven changes were heightening the risks of a future insurgency.

UN Photo/Kevin Bubriski
Children living in the slum area of Dhaka.

Migration from Bangladesh into India

Tensions between India and Bangladesh have long-standing roots in Partition, but appear to be affected more recently by two environmental factors: climate-driven migration from Bangladesh into India and the gradual drying up of the glaciers that source the major rivers running through both countries. This section will focus on migration, though the issue of water-related conflicts may also play a role in the future.[139]

Millions of Bangla speaking peoples of alleged Bangladeshi origin live in India. Reports indicate that hundreds of thousands move from Bangladesh to India annually, a trend the Indian Government has referred to as a national security threat.[140] India has attempted to take up the issue of illegal migration with the Bangladeshi Government, which is seen to have refused to take meaningful measures to address the flows of people from its territory into India. In response, starting in 2012, the Indian Government erected high-tech fencing and surveillance along parts of its border with Bangladesh.[141] Indian border security has also occasionally killed Bangladeshis in border security operations designed to push immigrants back across the border.[142] According to one group, more than 1,000 Bangladeshi nationals have been killed by Indian border forces since 2000.[143]

In addition to border tensions, the risks of violence within India are also related to the issue of migration, particularly in the Assam region north-east of Bangladesh. In the past, the issue of Bangla speaking populations in Assam has played a role in violent conflict, including the 1979-85 uprising.[144] More recently, the issue of immigration into the Assam region has again been at the centre of tensions, violent clashes

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and xenophobic anti-Muslim rhetoric.[145] These tensions are indirectly related to climate-driven changes in two ways: (1) within Assam, intensified flooding has displaced millions and caused greater competition over scarce land (the core issue of dispute amongst the communities there); and (2) flooding and salt water intrusion in Bangladesh has contributed to increased migration into India.[146]

The lack of up-to-date census data on immigration from Bangladesh into India means it is difficult to know with certainty whether immigrants are driven there by environmental changes in their home areas.[147] However, to extrapolate from an empirical study conducted regarding immigration from rural areas into Dhaka, the overwhelming rationale for relocating was environmental.[148] Given these findings, it appears likely that a significant portion of the immigrants leaving Bangladesh for Assam, India, are also driven by climate-related changes to their home areas, though this is a highly contested issue in India-Bangladesh relations. Given the political causes of migration though, government decision-making has in the past had an enormous impact on migration patterns in Bangladesh and India, while political positioning around immigrants is often the direct driver of the kinds of nationalism and xenophobia that drive violence.[149] Climate-driven population movements are nevertheless one among many factors influencing risks.

Finally, long-standing tensions between India and Bangladesh over water-sharing of the major rivers crossing their borders could be influenced by climate change in the near future. Amidst low levels of trust and outdated bilateral arrangements, both sides watch changes in water flows extremely carefully. A recent Bangladeshi decision to allow India greater rights to draw from the Feni river triggered significant political debate, while other agreements appear to face strong domestic pressures. While there is no indication that these tensions will break out into conflict in the short term, as climate change continues to affect water flows across the India-Bangladesh border, the potential for escalation may grow.

Urbanization and insecurity

The collective impact of climate-driven changes to riverbanks, sea levels and weather patterns has been to significantly accelerate population movements into large urban areas, Dhaka and Chittagong in particular. Natural disasters already displace 700,000 Bangladeshis each year.[150] Of these, at least 400,000 arrive to Dhaka, most claiming that they have been displaced by environmental shocks, including direct loss of livelihoods from tropical storms and flooding.[151] One study found that 81 per cent of slum inhabitants had moved to Dhaka for climate change-related reasons, even those who migrated several decades earlier.[152] Another study demonstrated the direct link between a major tropical cyclone and the creation of one of Dhaka's largest slums.[153] Dhaka's slums have swelled to accommodate these arrivals — areas considered slums or squatter colonies now account for roughly 80 per cent of the city.[154]

People moving from rural to urban areas are uniquely susceptible to risks of homelessness and landlessness and overwhelmingly reside in the poorest parts of cities.[155] Ironically, the cities present no refuge from the continuing impacts of climate change. In fact, a study of 136 global cities concluded that the two most likely to witness the greatest proportional increase in people exposed to climate extremes by the year 2017 were Dhaka and Chittagong.[156] The slums also present the most acute risks of violence, whether criminality, organized cartels or domestic forms of violence.[157] A 2007 World Bank study found that insecurity was a major problem in Dhaka's slums, with over 90 per cent of the population claiming to have been affected by violent criminality.[158]

Women are especially vulnerable to this violence, including sexual assaults and rapes, and have fewer avenues of recourse to protect themselves.[159] Additionally, one expert in Bangladesh noted that declines in livelihoods had an indirect effect on violence against women in the home. As women were increasingly

required to acquire employment alongside their work in the home, there appeared to be greater rates of domestic violence against them.[160] While this study is not focused on criminal or domestic violence *per se*, significant scholarship links various forms of violence with heightened risks of violent conflict. For example, the OECD's *States of Fragility* 2016 report described the complex ways in which different forms of violence interact and drive each other, calling it a form of "contagion" that could easily spread into other forms.[161] The rapid and largely unplanned urbanization in Bangladesh — driven in large part by environmental change — has contributed to sprawling violent slums, where resorting to criminality and increasingly organized forms of violent behaviour appear on the rise.

Poverty and inequality

Bangladesh has extremely high rates of inequality, with massive and growing differences between the living conditions of the elite and the poor.[162] The impacts of climate change are not felt evenly across the country but are borne most directly by the country's poorest communities. The Government's growth-focused development strategy may have a macroeconomic benefit on the country but does not appear to have been implemented thus far with inequality in mind.[163] Inequality is also affected by urbanization: Dhaka has the most unequal conditions in the country. Despite the appearance of greater opportunity, the poor of Dhaka tend to face the greater economic exclusion and social marginalization.[164] In the political economy of Bangladesh, climate change has the perverse result of making poor communities still more vulnerable to the next shock. And while there is no immediate relationship between inequality and violent conflict, there is strong evidence that political and economic exclusion are consistent and meaningful drivers of conflict in the longer term.[165]

The agricultural sector is the most susceptible to climate change and, according to a wide range of studies, is already significantly challenged. One study has found that climate change causes significant and rapidly increasing losses in the rice production sector, which currently accounts for over 90 per cent of Bangladesh's food production.[166] This can lead to precipitous shortfalls, such as in 2007 when a cyclone destroyed one million tons of rice and 350,000 trees.[167] Annually, climate variability reduces crop production by more than 7 per cent, a USD $26 billion loss that is experienced most directly by local farmers.[168] Beyond the economic impact, there is some evidence that changing rainfall patterns resulted in increased conflicts over water management for agriculture and fishing.[169]

Competition over land is another area of concern. The poorest people often live on government-owned land, which is provided for free. As these lands are eroded by climate change and combined with the displacement of hundreds of thousands of people per year due to flooding, competition over the free land has grown increasingly fierce. In some districts, overcrowding on government-owned land has resulted in open violence, while there are also reports of violent land grabbing in areas where migrants had relocated.[170]

Some scholarship has suggested that growing poverty and social marginalization may be driving recruitment into violent extremism, including jihadi groups with networks stretching into Afghanistan and beyond.[171] Violent attacks in 2015, reportedly by a group affiliated with Al Qaeda[172] and in 2016 by an Islamic State-aligned group, has kept the issue very much alive in Bangladesh. Recruitment into violent extremist groups is, according to some researchers, driven by socioeconomic inequalities that have been exacerbated by climate-driven changes to livelihoods.[173] However, as significant scholarship has demonstrated, it should not be taken for granted that simple causal lines between poverty and violent extremism are difficult to draw,[174] Experts on Bangladesh consulted for this study have stressed that the dynamics around violent extremist groups in-country are far more politically influenced than related to socioeconomic conditions. But there is a perception amongst some quarters that the risk of violent extremism in Bangladesh may have grown in recent years.[175]

Conclusion

There is a growing body of evidence to indicate that climate-driven changes in Bangladesh are contributing to greater risks of insecurity. The causal path is often not direct, but there is a strong case to be made that the increasingly severe and erratic weather patterns in Bangladesh have converged with existing risks in ways that have amplified the likelihood of violent conflict and in some cases contributed to violent deaths already. As the following section describes, the Government's response to emerging dynamics is crucial, in particular how national and local programming may mitigate (or indeed unintentionally increase) risks. Examining both the national Bangladeshi adaptation strategy and the UN's response, good practice and comparative lessons for the UN and partners are considered.

III

Adaptation Strategies: The Government of Bangladesh and the UN

Bangladesh is recognized as a global leader on climate change adaptation and Prime Minister Sheikh Hasina was awarded the UN's environmental leadership prize in 2015.[176] It was one of the first countries in the world to adopt a national plan of action in 2009, which aims to mainstream climate across all of its key ministries.[177] Building on this, in 2018 Bangladesh's National Economic Council issued Delta Plan 2100, a USD $37 billion strategy to secure the country's water resources and mitigate the effects of climate change over a 12 year period. The plan aims to build flood management capacity, improve agricultural sustainability, strengthen infrastructure in coastal zones and grow governance and transboundary cooperation around water resources. While there is some evidence that the plan may help mitigate some of socioeconomic impacts of climate change, the State's overall approach faces key shortcomings and challenges. These include when it comes to addressing inequalities, meaningful programming to address the impacts on women, urban planning and the unintended consequences of land reclamation. In some key areas, it appears that Bangladesh's climate change response is suffering from maladaptation, potentially worsening the risks of conflict.[178] And certainly, the climate-security lens has yet to become part of the Government's national level response.

Mainstreaming climate

The principle goal of mainstreaming climate is to ensure efficient use of resources, respond to the interconnected ways in which climate change impacts different sectors and build government responses that address inequalities and longer-term sustainability.[179] Bangladesh was one of the first countries to mainstream climate across its State development planning and policies, alongside climate-specific programming.[180] The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) contains more than 40 programmes and is supported by two trust funds collectively worth USD $270 million.[181] More than 100 projects have been funded so far, including research on drought, saline tolerant crops and coastal management.[182]

By placing climate at the centre of national level planning, Bangladesh has developed important capacities, including globally recognized climate expertise within its Government and its partners. Capacity-building around climate adaptation is a regular feature of Government-led projects, and Bangladesh now houses the important International Centre for Climate Change and Development. Additionally, it has a globally recognized early warning and disaster response system, which has achieved remarkable

successes in responding to some of the most serious environmentally-driven crises.[183] However, notably absent from Government plans and analysis is any acknowledgement of the risks that climate change may create for increases in violence. According to some experts, even the more indirect ways in which climate is driving risks to livelihoods is not present in national level planning.[184]

It is worth highlighting that Bangladesh's mainstreaming of climate change was initially criticized for being insufficiently focused on gender. A study carried out by the German International Cooperation Agency (GIZ) in 2012 noted that of the 44 programmes carried out under Bangladesh's 2008 strategy, only four mentioned gender specifically.[185] In 2013, however, the Government issued a Climate Change and Gender Action Plan, which recognizes the different impacts of climate change on women and lays out some programmatic responses tailored to support them.[186] This important initiative appears to have improved the ways in which some environmental programming has taken gender into account. However, the relative lack of gender-disaggregated data and analysis in Government programmes, along with chronic shortfalls in women's access to credit, land ownership and sustainable adaptation technology, means that climate effects remain disproportionately carried by women.[187]

Land reclamation – a double-edged sword

One promising Government initiative has been towards land reclamation in areas where erosion has caused massive land loss and displacement. While Bangladesh has worked for decades to reclaim land from the seacoast, efforts have increased dramatically in the past decade. With the support of the Netherlands, the Bangladeshi Water Development Board has overseen an ambitious set of projects designed to dam flood prone areas and rebuild land into the delta and the sea.[188] Already, Bangladesh has reclaimed more than 1,000 square kilometres from the sea and has set an ambitious plan of reclaiming a

total of 10,000 square kilometres over the next 20 years.[189] Increasing the amounts of arable and habitable land could alleviate some of the most immediate risks of intercommunal tensions.

However, Government-led land reclamation may have created new risks as well. There is evidence that some land reclamation projects have been seized upon as opportunities for land grabbing, especially by elites with insider knowledge of how the projects will be implemented. After land is grabbed, groups often hire private militias to secure their tenure by force.[190] This not only perpetuates inequalities, stripping poor communities of their livelihoods, but also introduces higher risks of violence around land tenure issues.[191] Land reclamation therefore appears as a double-edge sword: necessary for coastal communities to maintain their livelihoods but a potential new source of conflict in an era of land scarcity.

Unplanned urbanization

Hundreds of thousands of climate-displaced people leave rural Bangladesh and arrive in Dhaka every year. Across the country's major cities highly vulnerable people live in slums and have less access to State resources than other communities. Bangladesh's Government has not yet put in place a viable urban planning policy to address these trends at a macro or a local level. State-led urban development — particularly housing — does not prioritize inequality, improving housing affordability or improving access to land for vulnerable populations in cities.[192] The State provides almost no housing or land to urban populations, which has allowed the informal sector to become the dominant housing supplier in cities. As a result, the costs of land in the poorest slums is often significantly higher than in wealthier neighbourhoods.[193]

This has a disproportionately negative impact on the poorest populations, most of whom lack sufficient income to take out loans and who are therefore vulnerable to predatory practices and cycles of increasing poverty and dependence.[194]

Slum dwellers are also highly susceptible to flooding and the destructive capacities of tropical storms. Without a government-led response that targets their needs, many are caught in endless cycles of poverty and displacement. Worryingly, a study that interviewed several relevant Government officials found that they did not see a governmental role in addressing the needs of migrant populations in Dhaka's slums.[195] As one expert wrote, "national climate change adaptation policy does not consider urban adaptation and strengthening urban government capacity to reduce the vulnerability of the extreme poor as a priority."[196]

Relations with India

The complex relationship between Bangladesh and India has not allowed for meaningful bilateral arrangements to address cross-border migration. Lacking such arrangements, India has responded with increasingly harsh security and political measures. In late 2019, a new citizenship law in India that specifically excluded Muslims from a path to citizenship prompted large-scale protests and fears that the millions of Bangladeshis residing in India might be expelled. Reports of violence along the India-Bangladesh border indicated that at least 20 people were killed.[197] Bangladesh's response was to temporarily cut off mobile phone service along the border area (ostensibly to reduce rumour milling), to refuse attempts by the Indian security services to deport people from India and to formally protest the new law. While the current crisis may well pass, the longer-term issue of massive population movements — driven in part by the effects of climate change — is far from addressed and may well result in further violence.

Missing:
The climate-security lens

Bangladesh is a global leader in mainstreaming climate across its national plans. This has resulted in positive outcomes in many respects. However,

at a national level the links between climate change and risks of violence are fundamentally ignored. There is no mention of violence, conflict, or even displacement in Bangladesh's national climate plan. This is partially because much of the insecurity in Bangladesh has deeply political roots. Tensions over land ownership in the CHT, for example, are the result of decades of intercommunal dynamics and a sense amongst many in the area that they have been neglected by the Government. Likewise, the highly vulnerable Rohingya populations in Cox's Bazar are caught up in the conflict dynamics in Myanmar as well as domestic politics in Bangladesh. Long-standing tensions between India and Bangladesh mean that issues of migration and displacement are often politicized for domestic and foreign audiences. The intensely political nature of many of the conflict risks has resulted in a partial blind spot on the climate-security link, at least in terms of national level attention. One Bangladeshi expert captured the issue, "The Government simply isn't willing to accept climate-driven insecurity as a priority."[198]

The UN in Bangladesh

The UN's Resident Coordinator in Bangladesh has prioritized climate change adaptation across the UN's country level programming. In the 2020 Common Country Analysis, a document that is shared across the UN family though not published, climate change is featured as a major risk to the broader development, humanitarian and human security goals for the country.[199] A dedicated climate expert from UNDP supports the RC's office, offering climate inputs to the major UN-wide products and processes. Other climate expertise exists within several of the UN agencies on the ground. Broadly this work does not directly address climate-security linkages *per se*; instead, it is aimed at mitigating the effects of natural disasters, improving the resilience of vulnerable communities and addressing chronic food insecurity. Some of this programming may have a beneficial impact on the risks that climate change poses to security in-country and experts within the UN have highlighted that climate-security will be an increasingly important issue across the UN family in Bangladesh in the future.

Some of the most impactful work is in disaster risk reduction. The UN supports a local government initiative on climate change that aims to finance resilience projects in the 72 most vulnerable areas of the country.[200] The World Bank has invested USD $240 million in programming to support resilience and emergency preparedness, while the Asian Development Bank has proposed a USD $200 million grant to improve infrastructure in disaster-prone areas.[201] The UN participates in the Natural Hazards Risk Analysis Taskforce, which provides modelling on natural disasters and offers mitigation project proposals in response.[202] Importantly, much of the UN's work is focused on improving the resilience of especially vulnerable communities, including the World Food Programme (WFP)'s work to reduce the livelihoods and food security impacts of environmental shocks.

Given the specific and severe impacts of climate change on women, UNDP and UN Women in particular have dedicated capacities supporting relevant Government ministries to ensure the climate budgetary processes and overall planning are more gender-responsive. Alongside this advisory support, UN agencies provide disaster resistant livelihood programming for women most at risk, and programming meant to address maternal mortality, especially in the context of natural disasters.[203]

Supporting Bangladesh to implement its international climate obligations is another priority area for the UN, and one which may reduce the risks to the country over time. Specifically, the UN has supported the Government in complying with the three Rio Conventions and Multilateral Environmental Agreements and works closely with relevant agencies to help the Government meet its obligations on biodiversity, pollution and emissions under the Montreal Protocol.

Helping Bangladesh access new sources of funding for climate response is another important area for the UN. A range of UN agencies are accredited to the Green Climate Fund and are supporting the Government access new lines of funding. Looking forward, WFP and UNDP are supporting the Government to integrate forecast-based financing and climate risk insurance into its business process. This complements other significant investments, including those from the World Bank and the Asian Development Bank.[204]

The combination of a refugee crisis from Myanmar and extreme weather has required an unprecedented humanitarian response by the UN.[205] In September 2019, for example, a massive monsoon rain fell on the Rohingya refugee camps in southern Bangladesh that required the UN's largest emergency response of the year, with 16,000 people needing food assistance in only 24 hours.[206] As with government adaptation responses, however, the UN's are not immune from the unintended consequences of maladaptation. For example, a study of international aid to cyclone-affected areas in the CHT found that interventions may have exacerbated the vulnerability of marginalized urban populations due in part to a lack of engagement with community-based governance mechanisms.[207]

Taken together, the UN's support to Bangladesh is significantly focused on helping the country adapt to the new and harsh realities of climate change. While this is admirable and offers meaningful good practice for the rest of the UN system, the conflict-security link remains underexplored. In discussions with experts within and outside the UN in Bangladesh, it was clear that many saw the importance of bringing climate-security to the fore but found the practical aspects difficult to address. Many of the issues — especially around displacement, radicalization and land disputes — are extremely sensitive and difficult to discuss alongside climate. Similarly, it appears the humanitarian and development agencies tend to remain focused on the overwhelming nature of Bangladesh's natural disasters.

IV

Lessons and Conclusions

1 Think beyond climate change as a threat multiplier.

The term "threat multiplier" usefully positions climate change as one of many factors influencing security risks in a given setting, and it avoids the kind of deterministic causality that has caused concern amongst scholars. However, as the Bangladesh case highlights, merely thinking of climate as multiplier may fail to capture the scope of the impact and also the highly dynamic ways risks intersect in a complex system. One option proposed by a well-known climate-security scholar would be to recast the issue as one of converging risks, asking how the variety of risk factors (e.g. inequality, displacement, a history of violence and climate change) interact and feed each other.[208] This kind of analysis would more easily allow the UN to identify how climate change might be increasing risks in a variety of areas, leading to better programmatic response.

2 Anticipate maladaptation.

Though Bangladesh is in many respects a global leader in climate change adaptation, this study has demonstrated several ways in which the Government has maladapted, potentially increasing risks rather than mitigating them.[209] A key first step in addressing the risks of maladaptation is to begin planning with a clear intention to do no harm and avoid locking in the detrimental effects of new initiatives.[210] A second important step is to think of the longer-term consequences of palliative short-term actions. For example, improvements to infrastructure in cyclone-prone areas may reduce risks and boost the local economy, but this, in turn, could encourage people to remain in hazardous areas or create a pull effect that could increase tensions over resources.[211]

3 Enable inclusive adaptation.

One of the most common outcomes of maladaptation is the unintentional widening of the gap between rich and poor. While Bangladesh has in principle adopted a "pro-poor" principle to its climate strategy, in practice many of its programmes appear highly insensitive to the negative impacts on the poorest communities. There are almost always winners and losers when adaptation plans are implemented, and many of Bangladesh's plans risk driving marginalized people into even more vulnerable positions.[212] Horizontal inequalities do not necessarily directly cause conflict but they are a consistently cited as an important factor in driving societies towards violence.[213] Planning and implementing policies that target inequality directly should be central to future climate responses.[214]

4 Develop specific outcomes on gender.

As described above, climate change poses very specific risks to women in Bangladesh, from impacts on livelihoods to possible increased rates of domestic violence. While the Government has taken important steps to tailor programming towards women, much of it appears at the policy level, without specific outcomes and indicators that will measure success.

5 Think beyond the economy.

The bulk of scholarship on climate change in Bangladesh is focused on the economic impact on the country and its people. While economic trends are important, this study recognizes that social dynamics, long-standing intercommunal issues, political distributions of power, and differing impacts on youth and women are central to addressing the complex impacts of climate change and conflict risks.[215] It will be important to build up the capacity, within the Government and the UN, for this kind of analysis.

6 Build multi-scalar responses.

The threats to Bangladesh stem from far broader geothermal trends and require a response based on a firm understanding of how climate change is affecting the entire planet. However, in terms of Bangladesh's adaptation response, it is equally important that national authorities are aware of local realities when executing climate programming. Often the so-called "autonomous adaptation" of communities — how they seek to address risks amongst themselves — plays a determining role in how new programmes will play out.[216] Focusing on community-based governance also reduces the risks of maladaptation and may prevent some of the issues around elite capture discussed above.

7 Re-examine the terminology around migration and displacement.

Though beyond the immediate focus of this study, the displacement of huge numbers of people inside and beyond Bangladesh's borders strains the current terms used to describe and support displaced people. For example, many of the alleged Bangladeshis now residing in India have been described as more like "environmental refugees" than immigrants. Though this is a controversial issue with implications for international law, we believe the Bangladeshi case offers a compelling reason to revisit such terminology.[217]

8 Make climate-security a country-wide focus for the UN.

The presence of a climate-security expert within the Resident Coordinator's office offered a stark difference to other offices around the world. It was clear that climate-security was rapidly becoming an important lens through which the RC viewed Bangladesh, and in some offices (such as UNDP) there was also deep expertise on the issue. The RC herself was clearly deeply engaged on the issue and determined to find innovative ways to promote it with her interlocutors at all levels. However, when examining UN in-country programming as a whole, climate-security as a concept was essentially non-existent, whereas the overriding focus was on disaster response and adaptation. As laid out in the recent Secretary-General reforms, the entire development system needs to work for prevention. This will require every UN agency in countries like Bangladesh to ask themselves how their programming can help reduce the risks of conflict, avoid maladaptation and contribute to preventing escalation into violence.

Case 2 ⎯⎯⎯⎯⎯⎯⎯⎯

Nigeria

by Jessica Caus
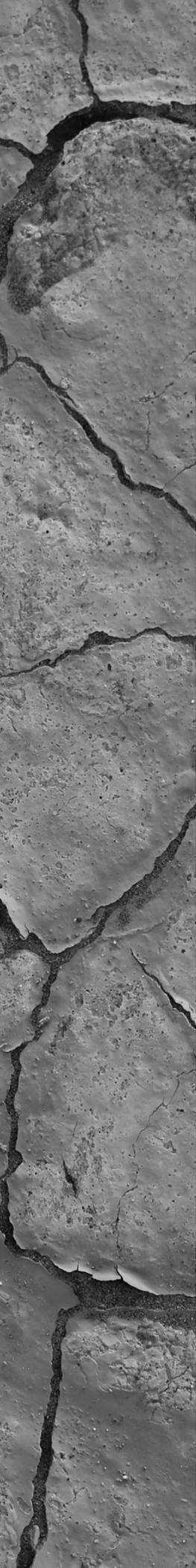
N igeria is Africa's wealthiest country and also one of the most prone to violent conflict. Possessing enormous natural resources and a vibrant agricultural sector, it is consistently ranked near the top of Africa's most powerful nations.[218] However, a combination of poor governance, deep inequality, political polarization and violent conflicts have undermined Nigeria's stability over the past decade. Compounding issues, including the persistent presence of Boko Haram in the northeast along with increasingly violent farmer-herder clashes and internal conflicts over oil resources, have caused thousands of fatalities each year and massive population displacements. As a result, Nigeria is now ranked as one of Africa's most violent countries.[219]

Nigeria is also highly vulnerable to the effects of climate change, which is already having direct impacts across the Sahel region.[220] Rising temperatures, more erratic rainfall (causing both droughts and floods) and rising sea levels along Nigeria's southern coast have contributed to large-scale changes in the agricultural sector, increased tensions over arable land and changed access to the country's oil revenues. Environmental changes may also be contributing to population displacements across the country and the broader region, not only through diminishing arable land, but increasingly due to sea level changes. More than 50 million people may need to be relocated due to sea level rises alone in the coming years.[221] With a population highly dependent upon agriculture, and amidst long-standing tensions around land and natural resources, changing

environmental conditions present serious and immediate risks to the country.

This case study explores the links between climate change and violent conflict in Nigeria. Acknowledging that the causal chains are often indirect and difficult to demonstrate with precision, the study investigates how environmental shifts may be feeding into the existing risk landscape. It focuses particularly on: (1) resource pressures around the farmer-herder conflicts; (2) how livelihoods may be driving recruitment into armed groups; and (3) population movements and displacement.[222] Based on an extensive literature review, interviews with Nigerian and external researchers and discussions with a range of UN officials, the study examines the Government and the UN's responses to these emerging risks and offers an empirical and analytic basis for improving the UN's prevention work.

Source: Commonwealth of Nations, "Nigeria," The Commonwealth Yearbook 2015 (Cambridge: Commonwealth Network, 2015)

Conflict Risk Landscape

This section explores the main conflict trends in Nigeria, focusing first on the presence of violent extremist groups (principally Boko Haram) and conflicts over resources. It also describes how socioeconomic trends such as urbanization, population movements, demographic growth, and shifting agricultural practices may be contributing to conflict risks. It concludes that poor governance of Nigeria's resources, along with regional dynamics often well beyond the control of the Nigerian State, have fed into a complex and highly volatile set of interrelated risks.

Violent extremism

Operating out of the Lake Chad region, the violent extremist group Boko Haram has been the main perpetrator of violence in Nigeria and a significant destabilizing force in the northeast of the country.[223] Between 2011 and 2018, increasing attacks by Boko Haram and violent clashes with the Nigerian security services have resulted in more than 37,500 people killed, two million displaced, and more than 240,000 conflict-driven refugees in neighbouring countries.[224] This has worsened already dire humanitarian conditions for the eight and a half million people receiving lifesaving aid in Nigeria, and also placing greater pressure on some of the poorest communities in the country.[225] Chronically poor governance capacities and endemic underemployment — particularly in the broader Lake Chad Basin — has allowed Boko Haram to recruit new fighters from local communities, challenge State institutions and move quite freely across Nigeria's porous northeastern borders. National and regional efforts to curb Boko Haram's influence appear to have contributed to a reduction in the group's capabilities from its peak in the 2014-15 period, but it still holds significant territories and has continued abductions and forced recruitments in much of the broader Lake Chad area.[226]

More recently, a splinter group of Boko Haram, the Islamic State in West Africa, has affiliated with Islamic State of Iraq and the Levant (ISIL) and built an influential presence in Nigeria's northeastern Borno State.[227] Perpetrating horrific violence against civilian populations, often along religious lines, these groups have prompted large-scale community mobilization by vigilante groups looking to protect themselves from attack.[228] In this context, one of the most brutal aspects of Boko Haram and its affiliates has been the widespread use of sexual and gender-based violence against women. In areas affected by

Boko Haram, six out of ten females are reported to have suffered some form of gender-based violence, with rapid increases in rates of violence in recent years.[229]

Farmer-herder conflicts

While Boko Haram has occupied much of the international community's attention and the State's resources, over recent years farmer-herder conflicts have caused more fatalities than the armed groups in Nigeria.[230] Large pastoralist groups stretch across the Sahel region, herding cattle along traditional seasonal routes that have existed for hundreds of years. Long-standing local cooperation and mediation practices have tended to keep conflicts to a minimum, though over the past decade these have been put under strain.[231] This is due to a combination of factors: demographic growth has increased the need for arable land and large-scale agriculture projects, shrinking the land available for cattle herding. The pressure

for food security has driven unsustainable agricultural practices such as overgrazing, poor water management and excessive tree felling for domestic firewood and charcoal, all of which have significantly reduced the amount of fertile land.[232] Violence in the northern part of the country has fractured traditional herding routes, driving pastoralists further into regions where traditional cooperation arrangements have not yet been put in place. At the same time, sprawling networks of arms smugglers and illicit traffickers have provided a steady supply of small arms and light weapons, increasing the chances that tensions might boil over into deadly violence.[233]

Farmer-herder dynamics cannot be separated from religious divides within Nigeria, which have been deepened by the presence of violent extremist groups in recent years. Roughly 90 per cent of the pastoralists in Nigeria are Muslim Fulani while many of the major farming communities are Christian.[234] Accusations that the Fulani have collaborated with so-called jihadist groups in Nigeria and neighbouring countries have fueled tensions at the political

Violence
Deaths per state from May 2015 - Jan 2019
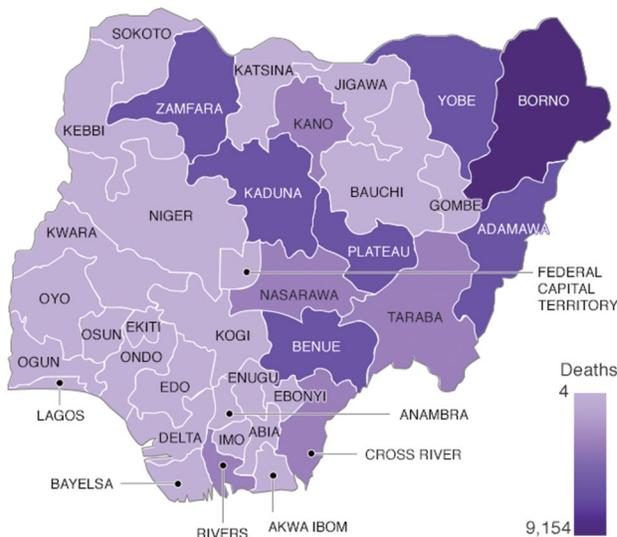
*Deaths include those from Boko Haram, between Boko Haram and military, sectarian actors and state actors

Source: Council on Foreign Relations's Nigeria Security Tracker

BBC

levels of the country, contributing to mobilization of ethnoreligious self-protection groups amongst Christian communities in the Middle Belt in particular.[235]

Focused overwhelmingly on the Boko Haram crisis, the Government has been criticized for failing to address the growing dangers of farmer-herder violence. President Muhammadu Buhari — a Fulani himself — has been accused of being overly soft on the herding communities, refusing to robustly prosecute the perpetrators of violence.[236] In this context, strong anti-grazing laws passed by some state governments in 2017-18 was seen as a punitive act against herders, prompting them to move into neighbouring states where new conflicts broke out.[237] More generally, the absence of strong State institutions in the northern states of Nigeria have led to widespread banditry and cattle rustling with high levels of impunity.[238]

The result is that Nigeria's Middle Belt and northernmost states have become some of the most dangerous in the Sahel.[239] Some estimates suggest that up to 300,000 people were displaced between 2016 and 2018 alone, with thousands of deaths in some of the most fragile communities in the country.[240] Worryingly, there is evidence that the killings have transformed in recent years from spontaneous tit for tat incidents to far deadlier planned attacks on communities.[241] As later analysis will describe, climate change is contributing to this spike in violence.[242]

Separatist agitation and conflicts over oil in the South

While most attention focuses on Nigeria's volatile North, its southern delta region suffers from long-standing disputes over natural resources that are being increasingly affected by climate change. For decades, local Nigerian groups have protested the extraction practices of oil companies and the national Government, complaining that they are marginalized economically while suffering the brunt of the environmental hazards of extraction.[243] Particularly in the region of the Indigenous People of Biafra, political and economic exclusion has fueled a decades-long insurgency and push for secession.[244]

Poverty and inequality

While Nigeria is a relatively wealthy country, it remains deeply underdeveloped and suffers from extremely high unemployment rates and poverty levels.[245] Overreliance on oil exports meant that the 2014 slump in oil prices triggered a rapid drop in economic growth and a spike in unemployment (up to 23 per cent in 2018). Today, Nigeria has the highest number of extremely poor people of any country in the world, with a poverty rate over 50 per cent.[246] Facing rapid demographic growth and increasing inequalities between rich and poor, socioeconomic grievances have become a significant driver of tensions and potential violence in Nigeria.

The most obvious outcome of poor economic growth and weak governance systems in Nigeria is endemic food insecurity. The agricultural sector is underdeveloped, resulting in low productivity and a high dependency on food imports.[247] At the same time, more than two thirds of the Nigerian workforce is in farming. Lacking sufficient investments in mechanized agriculture, most of the sector is dominated by rainfed farming, making crops highly susceptible to changing rainfall patterns, shifting water tables and desertification.[248] Rather than invest in staple crops that might reduce dependencies on foreign imports, the Government has focused investment in so-called "cash crops," which generate funds for farmers but do not provide food security for the broader population.[249] Significant rises in food prices were compounded by a 2019 decision by the Government to close off land borders to prevent food smuggling from Nigeria's neighbours.[250]

Poverty and unemployment are not distributed evenly across Nigeria. The oil-rich South has traditionally enjoyed far greater investment

Money
Average annual income per person in $

SOKOTO
KATSINA
JIGAWA
YOBE
BORNO
ZAMFARA
KANO
KEBBI
KADUNA
BAUCHI
GOMBE
ADAMAWA
NIGER
KWARA
PLATEAU
FEDERAL
CAPITAL
TERRITORY
NASARAWA
OYO
TARABA
OSUN EKITI
KOGI
ONDO
BENUE
OGUN
EDO
ENUGU
EBONYI
LAGOS
ANAMBRA
DELTA IMO ABIA
CROSS RIVER
BAYELSA
RIVERS AKWA IBOM

in thousand $
0-0.59
0.6-0.99
1-1.9
2-3.9
4-6.9
7-8+
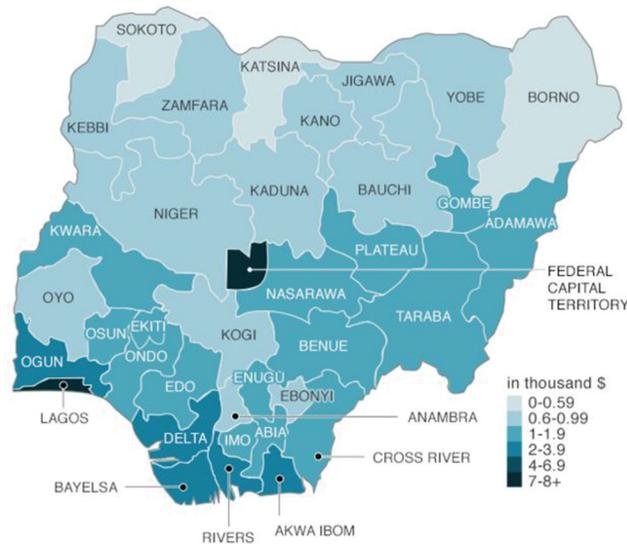
Source: Nigeria Bureau of Statistics   BBC

Source: BBC News, "Nigeria election 2019: Mapping a nation in nine charts" (London: BBC News, 2019).

and development, leaving the North a largely neglected hinterland.[251] The poorest regions also coincide directly with those that are suffering most severely from violence, whether from Boko Haram or farmer-herder conflicts.[252] However, this national level data obscures the fact that many southern communities are deeply impoverished as well, living in oil-rich territories without enjoying the benefits of their natural resources.[253] Economic marginalization is one of the most cited reasons for groups that have taken up arms against the State, and is a clear driver of many of the conflicts in Nigeria today.

Population displacements

Population movement is both a result and a cause of conflict in Nigeria and its neighbours, creating a vicious cycle that continues to render millions of people vulnerable in the broader region. In fact, Nigeria and its neighbours have reciprocal refugee flows: 52,000 Cameroonians have recently fled violence and sought shelter in Nigeria, while 111,000 Nigerians have left violence-affected areas and sought safety in Cameroon.[254] The most visible cause of such displacements is Boko Haram, which operates in Borno, Yobe and Adamawa states, causing hundreds of thousands of people to be displaced every year.[255]

According to several experts interviewed, newly arriving populations create strains on limited resources and are often the cause of renewed intercommunal tensions. More directly relevant, displaced populations are uniquely vulnerable to food insecurity and violent attacks.[256]

Impact on women

Women and girls are uniquely vulnerable to the conflict dynamics in Nigeria in a number of ways. They are the target of sexual and gender-based violence, including but not limited to horrific attacks by Boko Haram and its affiliates.[257] Women in displacement camps too are often vulnerable to sexual and gender-based violence.[258] In farmer-herder conflicts,

the loss of male breadwinners often leaves women in highly patriarchal societies with few coping mechanisms to support themselves and their families. With low education rates and few economic opportunities, women in conflict-affected parts of Nigeria tend to suffer the most.[259]

Weak governance

Nigeria's extremely poor governance capacities and high levels of corruption play an important role in the risks of violent conflict. With some of the worst corruption indicators in the world, the highest illicit outflows anywhere in Africa and significant diversion of oil revenues away from State coffers, Nigeria has struggled to build State governance capacities.[260] The bulk of national budgetary spending is on security, often resulting in heavy-handed responses to violent conflicts without accompanying social and economic programming. For example, widespread power cuts mean that some communities are left without basic services for weeks at a time, undermining communities' faith in the central Government.[261] More broadly, long-standing grievances between the northern communities (which have been traditionally cut off from largesse from the capital) and the Government feed into intercommunal tensions, Christian/Muslim antagonism and a willingness of the general population to take up arms to defend their land and communities.

Conclusion: A complex system of conflict risks

Nigeria presents a complex system of conflict risks that tend to interact and amplify each other in dynamic and unpredictable ways. In some respects, this can be described as conflict feedback loops: violent groups undermine and weaken State institutions, leading to worse service delivery and greater poverty and unemployment; poor livelihood options in turn drive recruitment into violent groups, again challenging the ability of the State to respond. The result is a system that is extremely sensitive to new shocks, easily triggered into escalating cycles of violence from which it is difficult to disengage. As the following sections explore, climate change is acting as an increasingly important threat multiplier within this complex system.

The result is a system that is extremely sensitive to new shocks, easily triggered into escalating cycles of violence from which it is difficult to disengage.

II

Climate Trends

Nigeria has been identified as a climate change "hot spot," one of the countries most exposed and vulnerable to climate change.[262] 41 million Nigerians live in high climate exposure areas, while four and a half million face very high climate exposure.[263] More than 40 climate-related disasters have occurred between 2000 and 2016, ranging from storm surges to inland flooding and wildfires.[264] An ecologically diverse country, Nigeria's tropical southern coastal area contrasts sharply with the arid steppe in the far North, meaning climate change is experienced differently depending on the region. This points to the need for localized, subnational data and analysis, while also examining the connections between regions within and beyond Nigeria's borders. This section explores the three dominant effects of climate change in Nigeria: (1) temperature and rainfall variability; (2) extreme weather; and (3) rising sea levels.

Temperature and rainfall variability

Nigeria has already witnessed a temperature rise of 0.8° Celsius since the 1960s, with predictions of a rise of 2° Celsius before 2050.[265] This warming is most acutely felt in northern parts of the country, where the next 60 years could see temperatures rise by up to 4.6° Celsius.[266]

Related to temperature rises, Nigeria is experiencing an increase in rainfall variability.[267] This includes both an increase in the number of extreme rainfall events — causing floods and crop destruction — and a prolongation and growing frequency of droughts, such as the one that plagued the Sahel region from 1968 to 1993.[268] The most exposed areas for changing rainfall patterns are the far north, and the eastern and central parts of the Middle Belt, including the region surrounding the capital, Abuja.[269] Predictions about future rainfall trends point to continued divergence from the rainfall patterns that sustained subsistence agriculture in the region for decades.[270]

The combination of higher temperatures and more variable rainfall patterns has contributed to the desertification of once fertile regions of northern Nigeria.[271] Broadly, the Sahara-Sahel is spreading southwards by about 1,400 square miles a year, swallowing whole villages and dramatically reducing the amount of arable land.[272] According to some estimates, two thirds of the northern and Middle Belt area affected by desertification are already now desert or semidesert.[273] Higher temperatures also increase evapotranspiration, contributing to an overall reduction in the amount of surface and groundwater resources.[274] Nigeria is extraordinarily reliant upon rainfall and groundwater resources, with populations and agricultural areas clustered around its 20 million hectares of lakes and rivers, especially

- - - projected increases in maximum daily temperature 2046–2065 (relative to the present day)

Tropical, Monsoon
Tropical, Savannah
Arid, Desert-Hot
Arid, Steppe-Hot
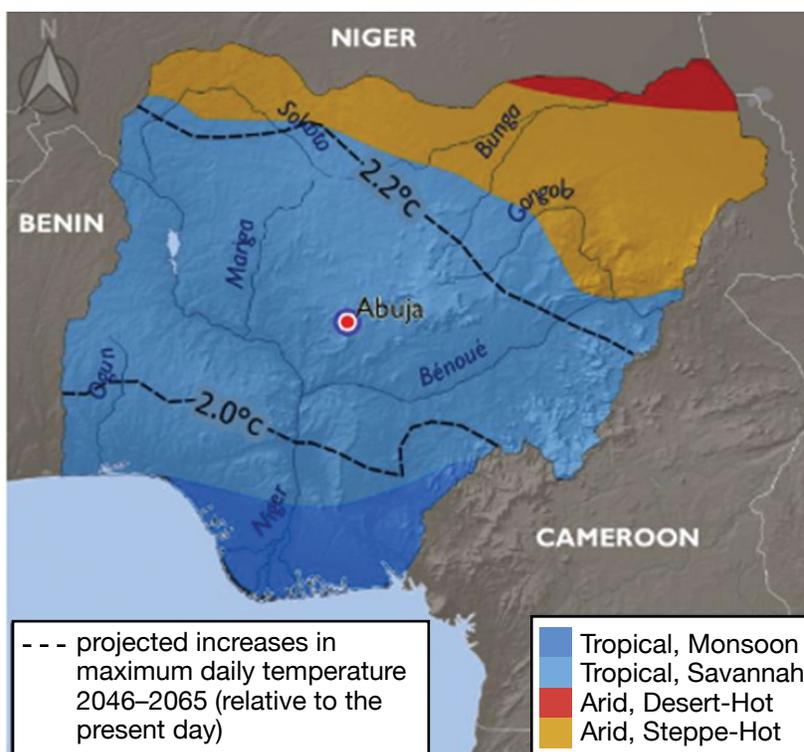
the Niger River and Lake Chad.[275] Reductions in river flows have been linked to droughts and variable rainfall patterns, while there is mixed evidence as to the effects of climate change on Lake Chad.[276] Climate experts have argued that even moderate decreases in rainfall in the future would have outsized impacts on water quantities in the major rivers of Nigeria, with serious implications on management and allocation across communities.[277] During the 25-year drought (1968-1993) for example, the Niger River Basin experienced a 60 per cent loss of water flows. National data has indicated a sharp drop in water tables over the last 50 years.[278] Additionally, increased flooding resulting from rainfall variability contributes to declining water quality in many areas of the country, with impacts on health and agriculture.[279]

Importantly, climate change is not an isolated factor in the loss of arable land. Changing demographics, agricultural practices and land use also influence the hydrology of the country.[280] In fact, some studies have suggested that expanding cities and spreading agricultural production (requiring greater water use) are the dominant stressors of the Nigerian ecosystem, while climate change is better thought of as an exacerbating factor, reducing arable land and contributing to crop failure.[281]

Extreme weather

Closely related to greater rainfall variability, climate-driven extreme weather events appear to be increasing in Nigeria. While droughts tend to be experienced as slow onset events with impacts such as wildfires and crop failures, extreme weather are rapid onset heavy storms and torrential rainfalls causing massive flooding and destruction. These have become harsher and more frequent in recent decades: in 2012, for

FLOOD INDICATOR FOR 2030 (BCCR_BCM2_0)

| Low (% change < 5%) | Medium (% change between 5% and 15%) | High (% change > 15%) |
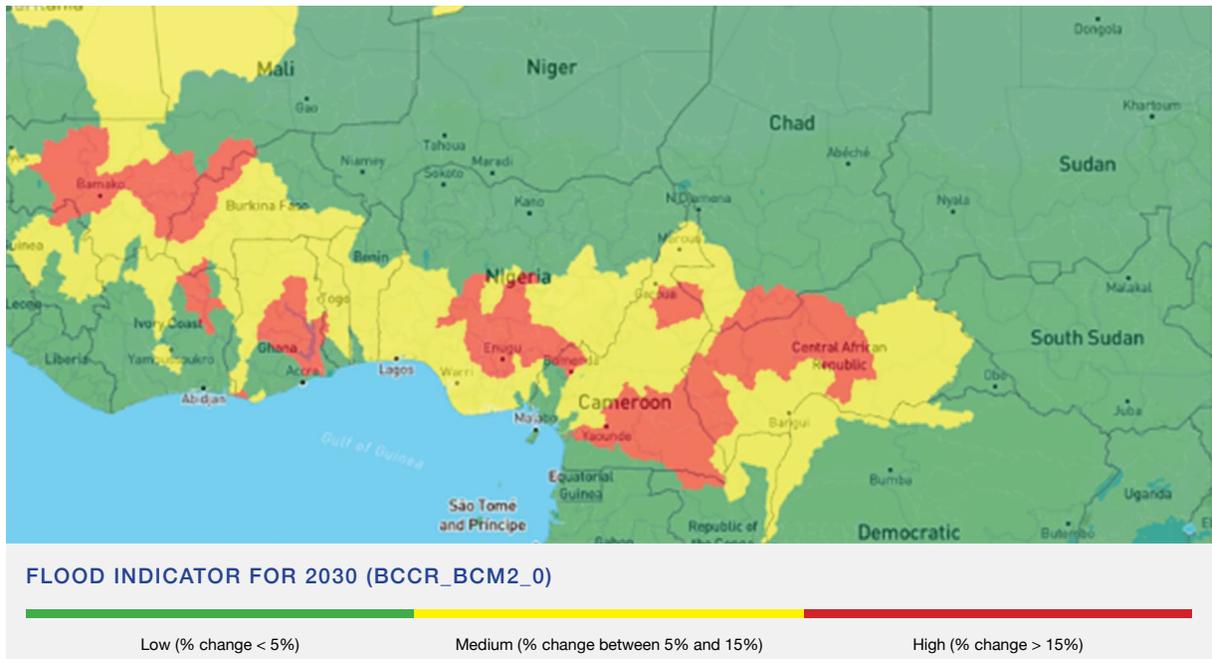
Source: World Bank Climate Change Knowledge Portal,
"Nigeria Impacts, Water" (Washington D.C.: World Bank, 2019)

example, extreme weather caused widespread flooding of the Niger and Benue rivers, which affected seven million people, killing over 360 and displacing more than two million, in addition to destroying homes and farmland.[282] Another series of floods between 2015 and 2017 was also responsible for a number of deaths and over 100,000 displacements.[283] Flooding also has negative impacts on water quality and water infrastructure. Over the past 40 years, recorded volumes of torrential rains increased by 20 per cent in parts of southern Nigeria, with significant impacts on the country's economy and infrastructure.[284]

Rising sea levels

There is scientific consensus that climate change contributes to sea level rises globally, though this is experienced differently across regions.

The Gulf of Guinea, which runs along Nigeria's southern coast, is already experiencing increased erosion due to sea surges and is expected to undergo a sea level rise of up to one metre by the end of this century.[285] The 500 mile long coastline averages less than 20 feet above sea level, while the delta region has a highly flood-prone complex of estuaries running across low lying areas.[286] Already, a number of coastal towns have been affected by sea water inundation, with significant future risks for the 21 million people living in Lagos on the south-western coast.[287] Estimates indicate that a one meter rise in sea level could cause 75 per cent of the land in the Niger Delta to be lost, threatening millions of livelihoods.[288] Furthermore, rising sea levels are causing saltwater intrusion/salinization and pollution of existing surface and groundwater resources in coastal areas, damaging coastal aquifers and coastal industry.[289]

III

The Impact of Climate Change on Conflict Risks

Existing scholarship has not reached a consensus on the precise causal relationship between climate change and the risks of violent conflict. While some studies have posited a direct cause-effect impact between higher temperatures and violence,[290] there is a widely accepted view that climate change tends to act indirectly as a "threat multiplier," exacerbating tensions over resources, contributing to socioeconomic grievances, weakening livelihoods, and causing displacement, all of which could add to risks.[291] Here, broad generalizations about the climate-security nexus are typically unhelpful; instead, this section examines national and subnational data and the various interlinkages — direct and indirect — between environmental changes and violent conflict.[292] It finds that there is some evidence of climate-driven trends affecting: (1) farmer-herder conflicts; (2) recruitment into non-state armed groups; and (3) population movements that may heighten tensions. These effects are not always direct and in some cases are open to multiple interpretations, underscoring the need for even greater localized research in the future.

Resource pressures and farmer-herder violence

The principal argument linking climate change to the recent rise in farmer-herder conflict concerns desertification and rainfall variance reducing the land used for agriculture and cattle raising. Additionally, desertification has prompted a shift in pastoralist routes across northern Nigeria, bringing herding communities into contact with new farming communities.[293] In broad terms, this analysis follows the neo-Malthusian argument that shrinking resources and growing populations create new strains on societies, eventually leading to violent conflicts.[294] But there are also indications that environmental changes are playing into deeply rooted social and political animosity between communities, contributing to the dramatic rise in loss of life in recent years.

Roughly 75 per cent of northern Nigeria is now desertified, while in the north-eastern part of the country the number of annual rain days has dropped by 50 per cent.[295] The lifestyle of the herder Fulani community — which comprises

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the bulk of the 15 million herders in Nigeria — is strongly affected by these environmental changes. Loss of grassland means they must move further south in search of vegetation.[296] Some of this migration is permanent, meaning herders spend the entire year in the Middle Belt and southern regions of Nigeria, rather than moving in a North-South pattern over the seasons.[297] Moreover, erratic rainy seasons have disrupted long-standing arrangements under which herding is staggered with planting and harvesting seasons, meaning today's herds are often destroying crops rather than fertilizing them.[298] According to one study, environmental decline and resource scarcity ranked as the prime reasons for herding communities to venture further southwards in their migration patterns.[299] Farmers too broadly cite conflicts over resources as the main cause of violence with herding communities.[300]

Evidence from the broader Sahel region supports the finding that climate change is driving risks of greater farmer-herder conflicts in Nigeria. In Burkina Faso, for example, desertification is causing herding communities to remain around contested water points longer into the migration season.[301] A combination of desertification, erratic rainfall, and human-caused environmental degradation in Mali has contributed to greater competition over land resources and a spike in violence (though, of course, other factors play a role there too).[302] In Chad, the cycles of violence between farmers and herders appear to follow the same pattern as in Nigeria.[303]

Tensions between farmers and herders take place amidst the broader identity politics of Nigeria and the worrying increase in the notion of "indigeneity" in parts of the country. With a constitutional status meaning "original inhabitant," the concept of indigeneity is used in Nigeria to provide privileged access to key natural resources; it has also been in the background of some of the country's worst violence.[304] In a country with a deep North/South and Muslim/Christian divide, these dynamics play out at all levels of the country, from the presidency to the smallest farming community in the North. In

interviews with experts, many pointed to growing anti-Fulani sentiment in this context, suggesting that shrinking land resources are contributing to a sharpening of xenophobia.[305] It also intersects with the rapid rise of violent extremism in Nigeria, where the Muslim Fulani populations are often accused of supporting armed groups in the region, despite often being the target of attacks by Boko Haram and others.[306]

As the following chapter on the Government's response describes, farmer-herder conflicts are directly connected to the issue of governance of resources and the highly politicized nature of land tenure across Nigeria. According to experts, three interrelated drivers of the current spike in violence can be identified: (1) environmental degradation in the far north, causing encroachment into the Middle Belt grazing grounds; (2) militia attacks that raise tensions amongst the communities; and (3) poor governance, including the failure of the Government to punish past perpetrators and some states' passage of new grazing laws (see below).[307] As the population of the country continues to swell — demanding greater use of land for agriculture — climate change-desertification and erratic rainfall plays a "threat multiplier" role, rendering these tensions more acute.

Impacts on livelihoods and recruitment by non-state armed groups

There is wide-ranging and detailed evidence demonstrating the direct and significant impact of climate change on Nigeria's economy, with some links to higher conflict risks.[308] Largely rain-fed crops constitute more than 90 per cent of the agricultural sector, and some areas are already experiencing a loss in length of growing days by 20 per cent.[309] There is some evidence too that animal production has been negatively affected by environmental changes, which have caused greater disease, difficulties

in food storage, and a resulting 20 per cent drop in livestock production in some areas.[310] Land degradation as a result of sandstorms, desertification and desert encroachment is increasing poverty and unemployment in many of the northern regions,[311] while extreme weather has destroyed hundreds of millions of dollars in productive assets.[312] Looking forward, Nigeria's vulnerability to climatic factors could result in a loss in the country's Gross Domestic Product (GDP) of between 6 per cent and 30 per cent by 2050, worth an estimated USD $100 to $460 billion.[313] These changes are the result of interrelated trends: desert encroachment, sea level incursions into coastal farmlands, shifting agricultural practices to accommodate drier seasons and the need to feed a rapidly growing population.[314]

With 25 per cent of the population and the bulk of the oil and gas industry located along the southern coastline, Nigeria's economy is also extremely vulnerable to sea level changes and extreme weather. For example, the oil production sector incurred over USD $630 million in losses from the 2012 flood event due to lost production and infrastructural damage.[315] The Federal Ministry of Environment has calculated that three feet of sea level rise would cost Nigeria USD $43 billion in GDP over thirty years.[316] Industry watchers and officials believe the added production costs, drops in investment and lost or deferred production could be extraordinarily damaging in the near future.[317]

Recent research has demonstrated the links between livelihoods and the ability of non-state armed groups to recruit new members.[318] In the Lake Chad area, for example, Adelphi has described a feedback loop between armed conflict and socioeconomic conditions.[319] Years of conflict, poverty and human rights abuses by state and non-state actors have created volatile conditions for the communities around Lake Chad, rendering them more vulnerable to new shocks. Severe droughts over decades caused significant displacement from the area, while erratic rainfall seasons have left communities unable to consistently plant traditional crops. Lacking employment alternatives, residents of areas strongly affected by livelihood losses

are more likely to join groups like Boko Haram; indeed, several studies have pointed to a direct link between economic marginalization/losses and Boko Haram's strength.[320]

It is worth highlighting again the cyclical nature of this dynamic. Boko Haram's presence in Nigeria has contributed to a reduction in agricultural output, weakening livelihood options for many of the poorest communities in the country.[321] At the same time, diminished livelihoods appear to increase the ability of the group to draw in new recruits. Poor governance and a heavy-handed response by the Nigerian State has played into the disenfranchisement of many northern Nigerian communities, again driving the cycle of marginalization and a willingness to pursue violence.

However, there is an important note of caution here. Debate between scholars concerning reasons for recruitment into groups like Boko Haram continues. Some empirical studies based on surveys of affected communities do indicate that high levels of unemployment and loss of livelihoods render young people more susceptible to joining Boko Haram.[322] Others, however, theorize that heavy-handed counterterrorism operations and highly porous borders across the Sahel allow Boko Haram to build its strength.[323] These findings are broadly consistent with Adelphi's conclusions that climatic factors are exacerbating long-standing tensions and generally increasing the resort to violence.[324]

Migration and displacement

Nigeria resides at a crossroads of the Sahel and has been traversed by migratory and displaced populations for centuries.[325] As discussed above, there is evidence linking the impact of climate change on the migratory patterns of pastoralist communities. Where farmer-herder conflicts result in displacements — and there are credible reports of hundreds of thousands of people displaced in the past two years alone — this

study concludes that climate change is playing a contributing role.[326] Similarly, the hundreds of thousands of people displaced by Boko Haram and other armed groups can be tangentially linked to some of the climate-driven factors that affect livelihoods and drive recruitment into those groups, as set out above.

However, the evidence is less clear when it comes to other forms of migration and displacement; even climate-driven population movements do not necessarily increase the risks of violence, though certainly do create greater vulnerable populations.[327] One potential area where the link may be clearer is that of urbanization: as livelihoods in northern and central Nigeria have become more precarious, migration to Nigeria's major cities has increased in recent years, with thousands of people arriving each week in Lagos alone.[328] Chronic food insecurity across much of the Sahel has contributed to this trend of urbanization, where highly vulnerable farming and herding communities come in large numbers to the cities.[239] The bulk of this migration is unplanned and cities are ill-prepared, meaning large numbers of migrants are forced in live in informal settlements and rely on sporadic employment; these populations are some of the most vulnerable to economic shocks, and also susceptible to recruitment into criminal gangs and other violent groups.[330] Large-scale influxes of migrants have further led to identity based frictions with residents, as seen in the slums of Bauchi, Kano and Kaduna, where violence is increasingly occurring along ethnic and religious lines.[331] As the OECD and others have noted, violence of one kind (e.g. domestic or gang) tends to spread into other forms, contributing to an ecosystem where the risks of violent conflict tend to grow.[332] In Nigeria's sprawling urban centres, some experts are predicting the risks of increased violence will grow dramatically in the coming period.[333]

Another growing issue is that of submerging coastal land as the sea levels rise along Nigeria's coast. When combined with extreme weather, higher sea levels have contributed to massive flooding that has already displaced hundreds of thousands along Nigeria's heavily populated coastline, displacements that often become permanent due to poor reconstruction efforts.[334] These trends are worsening: one study found the homes of over nine and a half million Nigerians could be vulnerable to rising seas by 2050.[335]

Conclusion: The climate-fragility-cycle

Nigeria presents a complex, interrelated socioeconomic system where changes in one sector can have significant impacts in a distant arena. While the effects are often indirect, rising temperature have played a measurable role in increasing conflicts over natural resources, heightening tensions between pastoralists and farmers, limiting livelihoods of vulnerable populations that may be susceptible to recruitment into armed groups and displacing people from their land. In this sense, climate change may not act as a trigger for conflict but rather an amplifier of risks and vulnerabilities to conflict.[336] Worryingly, climate change thus appears to participate in a series of feedback loops driving Nigeria into greater cycles of violence: as livelihoods worsen, people are more likely to resort to violence, causing further damage and displacements in a territory that is rapidly losing arable land.

In this cycle, the Nigerian State is largely perceived as weak and unable to manage the risks of violence in an effective or balanced manner.[337] In fact, across a wide range of scholarship, long-standing grievances against the State are cited as one of the most important factors driving conflict in Nigeria, including the rise of Boko Haram.[338] Central to conflict prevention is thus the Government's role in adapting to climate trends, helping to address key sociopolitical vulnerabilities, and meeting the security challenges posed by armed groups on its territory. The following section explores this issue, and the UN's role in supporting adaptation and prevention.

IV

Adaptation and Prevention

While State weakness is often at the heart of many of Nigeria's challenges, this does not imply Government idleness in terms of tackling the impacts of climate change and conflict risks across the country. In fact, a number of measures point to increasing Government efforts to mitigate these dynamics. These can be broadly divided into three interrelated and at times overlapping areas: (1) climate change policies; (2) socioeconomic programming; and (3) conflict prevention or security responses.

Climate change mitigation and adaptation

Addressing climate change is one of President Buhari's main policy priorities — in fact, one UN expert deems him "the most engaged president in Nigeria so far when it comes to climate issues."[339] Apart from scaling up its Nationally Determined Contributions connected to the Paris Agreement, Nigeria is also currently revising its national policy on climate change, including more focus on the security dimension.[340] Nigeria was the first African country to issue Green Bonds meant to raise local and international funds for climate change projects, for instance around afforestation and renewable energies.[341] This approach has increased the profile of

green projects significantly and will continue to do so as it expands to include further climate-relevant sectors.[342]

Another significant initiative is The Great Green Wall, where Nigeria is part of a multi-country reforestation programme stretching across the width of the Sahara-Sahel region to combat desertification and its impacts on agriculture and livelihoods.[343] The programme is said to have restored five million hectares of degraded land in Nigeria thus far.[344] President Buhari attributes a critical conflict prevention role to this reforestation, describing how restoring barren land counteracts the resource scarcities that are at the core of the farmer-herder clashes.[345] A range of experts interviewed for this project agreed that reforestation and other efforts to combat desertification have reduced the risks of violent conflict between farmers and herders.

These programmes, however, are facing a number of challenges. Reforestation in Nigeria still makes up only about ten per cent of the overall deforestation rate.[346] Vandalism and illegal tree felling, enabled by weak protection laws and poor supervision structures, works against reforestation efforts.[347] In some instances, local communities experience reforestation as a Government intrusion on their land, refusing to engage positively with the Government.[348] Lack of buy-in is also reported at the level of local and state governments,

pointing to a more fundamental challenge for efficient climate policies (or prevention efforts, for that matter). Experts have pointed out that land restoration in Nigeria is almost exclusively through tree planting, lacking important complementary efforts to rebuild rural livelihoods.[349] Given that Nigeria's decentralized structure grants significant autonomy to the states, federal impetus can only lead to wide-reaching programmes if met with sufficient political will and capacity at the state and local level.[350]

There are also cases where adaptation or resource management approaches backfire. In the 1990s, for instance, the Government constructed two dams on the Yobe River intended to improve irrigation agriculture and water supply for Kano, the biggest city in the North and the second largest in the country. The dams captured 80 per cent of the water that had originally flowed into the Hadejia-Nguru wetland (and later into Lake Chad) — drying up the farmland and pastures of over one and a half million people who depended on the wetland for their livelihoods.[351] Most fishers, farmers and herders in the region lost their economic base and have since relocated to Kano or outside Nigeria in search of alternative income opportunities.[352] There are unconfirmed reports that some joined Boko Haram, which not only underlines how environmentally-based livelihood losses may drive recruitment, but also highlights the crucial role of water (mis)management in these dynamics.[353] In fact, a Government audit of the situation in the Lake Chad Basin found that water governance practices have negatively affected the area and contributed to more resource competition, violent conflict and forced migration.[354]

Socioeconomic programming

Socioeconomic grievances are at the core of many of Nigeria's conflict risks and constitute an important link between climate change and violence. Economic and socioeconomic programming, therefore, can play a crucial role

in mitigating the impact of climate change on conflict risks.

Given Nigeria's heavy dependence on those sectors that are most vulnerable to climate change, economic diversification is a key measure to reduce the risk of macroeconomic shocks following extreme weather events or prolonged droughts. The Government has attempted to address this through its Economic Recovery and Growth Plan, a medium-term strategy to restore economic stability and revive growth across the country.[355] A main pillar of this strategy is the diversification of the energy sector to include more renewable energy sources like hydro, solar, wind and biomass power as well as nuclear energy.[356] In that way, disasters such as the flooding in 2012 that drastically disrupted the oil industry could have less of an impact on the overall economy in the future.[357]

Strengthening the agricultural sector is a related effort. The Government's main focus is to raise productivity and boost food production, including by subsidizing agricultural inputs such as seeds, fertilizers, and machinery.[358] Expert assessment of this approach, however, is rather sobering. According to a UN official, Nigeria's Government invests the least in agriculture compared to other sectors, while placing an undue focus on cash crops instead of staple crops.[359] Many interviewees described this as a short-sighted strategy that merely focuses on short-term mitigation while neglecting long-term climate resilience and livelihood sustainability.[360] "It's just treating the symptoms and not the cause of the agricultural challenges," one expert explained, while another added that much more focus needs to be placed on supporting smallholder subsistence farming, as it makes up the bulk of Nigeria's agriculture and — being mostly rain-fed — is most vulnerable to climate change and shrinking crop yields.[361] Similarly, Nigeria's 2019 decision to close off land borders and prevent foodstuff smuggling was meant to boost national food production but had the unintended consequence of increasing food prices.[362]

The Government's economic and agricultural programming thus appears to be having some beneficial short-term impacts in some sectors

but is lacking in the longer-term sustainable investments needed to tackle climate-driven changes across the country.[363]

Conflict prevention and security responses

The Government's response to farmer-herder conflicts has been largely security-driven: in the worst affected states, the Government has deployed security forces to contain the violence. While this has contributed to a short-term reduction in insecurity, the inability to maintain troops for longer periods of time, combined with the spread of violence in many areas beyond the reach of the State, has allowed farmer-herder violence to continue to grow over recent years.[364] Indeed, several experts suggested that the Government's overriding focus on Boko Haram has meant far fewer resources have been made available for farmer-herder issues.[365]

At the state level, the response has been more focused on reducing the interface between pastoralists and farming communities. In 2017-18, the states of Benue and Taraba introduced laws that banned open grazing in an attempt to curb resource-based violence.[366] The legislation significantly restricted the movement of cattle and required herders to buy land and establish ranches, essentially banning their traditional pastoralist practices. It prompted a massive outflow of herders and their cattle into neighboring states, sparking deadly clashes with sedentary farmers there.[367] The laws were then partly suspended following the increase in violence, though may have contributed to longer-term tensions amongst communities.

At the national level, the Government has tried to tackle farmer-herder conflicts through mediation and resource management. Government-led dialogue promotion between farming and herding communities has resulted in some reductions in tensions but has thus far been fairly small scale and *ad hoc*.[368] Similarly, efforts at establishing "cattle colonies" that assign herding communities to specific areas have not resulted in major changes to the farmer-herder

dynamics. More ambitious is Nigeria's National Livestock Transformation Plan, designed to bring about an incremental shift from open grazing to ranching, reducing the movement of herding communities, modernizing livestock management and improving agricultural productivity.[369] Embedding this into a broader regional strategy is seen as crucial, but long-standing plans for an African Union-led approach to managing Fulani transnational migration have not yet been put into action.[370]

Here, it appears the Government has learned a lesson from the state level bans on grazing, focusing instead on incremental changes to herding areas that could gradually reduce the negative interfaces between herders and farmers. In the short term, however, it does not appear that farmer-herder conflicts are abating as a result of these new laws. Some have suggested that this points to a weakness in the resource-scarcity argument, whereas more structural issues around marginalization, weak State capacity and religious polarization are more causally important.[371]

There is a growing recognition of the centrality of livelihoods to the issue of recruitment into Boko Haram.[372] In response, the "Buhari Plan" has allocated significant resources for rebuilding in Boko Haram-affected areas, in the hopes of stemming future recruitment.[373] This strategy was informed by a Recovery and Peacebuilding Assessment (RPBA) undertaken in 2016 in a concerted effort by the Government, the European Union, the UN and the World Bank (see below). The RPBA still serves as the main joint analysis for the north-east, but there have been calls for an update and an improved formulation of peacebuilding needs in the area.[374]

Additionally, Nigeria is part of a recent regional stabilization strategy led by the Lake Chad Basin Commission. Focusing on the broader Lake Chad area, this strategy aims at socioeconomic recovery of conflict affected areas, and at improving service delivery and environmental sustainability — with an emphasized focus on climate change. According to the Commission, "all future investment in socioeconomic development must be climate-proofed: climate change fragility assessments should underpin

the planning process to build resilience to shocks, support adaptation and mitigation, and ensure long-term sustainability."[375] While rebuilding conflict- and climate-affected livelihoods is a key measure to curb recruitment into violent extremist or other armed groups, many projects are still in their infancy, which complicates a robust assessment.

In sum, there appears to be a growing recognition at the Government level that socioeconomic programming may hold more promise in addressing some of the major sources of insecurity in northern Nigeria. Longer-term incremental efforts to adapt agricultural and herding practices may hold some promise, particularly if it is paired with socioeconomic programming that addresses the issues of marginalization and poverty underlying many of the conflicts. In fact, these appear more likely to address the ways in which climate change is affecting security risks than the shorter-term efforts to curb grazing or deploy troops to conflict-prone areas.

UN efforts

The situation in Nigeria presents one of the most pressing challenges for the UN to put conflict prevention meaningfully at the forefront of its work, especially considering the already large number of violent conflicts across the country. In terms of addressing the violence and its root causes — and including the role of climate change — the UN is engaging on several fronts.

CROSS-CUTTING ANALYSIS

Understanding the specific conflict drivers in each context and the role that climate change might play is a key prerequisite for efficient responses and the UN has significantly increased its capacities for such cross-cutting work. According to a UN official, the RPBA for the north-east (of which the UN was a part) was the first time that a connection was made between the security situation in the Lake Chad region and climate change.[376] However, several interviewees suggested that these kinds of reports needed to be more regularly updated and more clearly linked to revisions in peacebuilding priorities for the UN system in the region.[377] The presence of a Peace and Development Advisor in the Resident Coordinator's Office is seen as an important resource in this regard.

The United Nations Office for West Africa and the Sahel (UNOWAS) too is focusing a bulk of its work on understanding national and particularly regional conflict dynamics, adding an important dimension as climate and transhumance issues clearly stretch across national boundaries. In his briefings to the Security Council since 2017, Special Representative of the Secretary-General Mohamed Ibn Chambas has been giving updates on the situation in the Lake Chad region, following Resolution 2349 that also called for the consideration of the effects of climate change on the region's stability.[378] This has been a major entry point to convey analysis about the climate-security nexus to the Council. In 2018, UNOWAS released a comprehensive report about pastoralism in the Sahel, including the role of climate change in increasing resource pressures and presenting a range of recommendations for UN country teams.[379] As of early 2020, UNOWAS' mandate explicitly calls for the organization to account for the role of climate change in driving country risks in its work, which is beginning to take shape in a new assessment project.[380] UNOWAS is currently conducting community-based field research in several Sahelian countries, soon including Nigeria, to explore the actual, on the ground impact of climate change on the security and livelihoods of communities.[381] This analysis will inform the work of the Economic Community of West African States (ECOWAS), UN country teams and other regional partners, and will highlight the need to make climate adaptation plans more conflict-sensitive.[382]

STABILIZATION OF THE LAKE CHAD AREA

According to a UN official, UNDP was instrumental in the drafting of the regional stabilization strategy that is currently being rolled out in the Lake Chad Basin.[383] Starting in 2019, UNDP has been supporting Boko Haram-affected areas

through a regional stabilization facility that acts as a "rapid response mechanism to help the local authorities curtail the ability of Boko Haram insurgency by restoring and extending effective civilian security, [to] improve the delivery of basic services and livelihoods."[384] Despite its short-term focus, the USD $100 million project is said to help lessen the appeal for further recruitment and will be extended to provide longer-term support for community resilience.[385]

The Lake Chad area will further see increasing engagement through the UN's New Way of Working, where humanitarian and development actors jointly work towards collective outcomes that were formulated together with the Government.[386] The outcomes include enhanced service delivery, food security, livelihood support, social cohesion and reconciliation. A nexus adviser helps the UN and the Government coordinate and operationalize the collective outcomes towards state level policies.[387] While this work is in progress, there is a strong need to better link existing programming and financing to the outcomes.[388]

Stabilization work in the north-east is crucial to counteract the mechanism by which climate-driven livelihood losses pose an additional entry point for Boko Haram and other armed groups to recruit new members.[389] The communities in the region are facing the double burden of ongoing violent conflict and the impacts of climate change on their agricultural livelihoods; any livelihood programming needs to account for these heightened vulnerabilities, finding ways to sustainably build back rural economies in order to curb recruitment. As recruitment numbers into Boko Haram are, however, hard to track, determining the efficacy of such countermeasures remains a challenge.

FARMER-HERDER CONFLICTS

Responding to the spike in violence, a substantive part of the UN's prevention work in Nigeria is centered around farmer-herder conflicts.[390] This has involved multiple initiatives: (1) the UN was actively involved in the discussions around the National Livestock Transformation Plan, setting up a number of guiding principles to reduce tensions and build social cohesion among communities;[391] (2) the Peace and Development Advisor created a UN-led coordination forum, bringing together all stakeholders (including representatives from farmer and herder associations) to develop action plans around the issue;[392] (3) funded by the UN Trust Fund for Human Security and the Peacebuilding Fund, new projects were introduced in several states that are affected by the violence, looking to reduce tensions around land;[393] (4) Human Rights Advisors have been deployed in a number of states to provide early warning and report on incidences of human rights violations;[394] (5) UNDP is engaging in Benue, Nasarawa and Taraba states with a prevention-oriented project that supports dialogue and social cohesion, building mutually beneficial economic relations between the two groups, and attempting to identify future grazing patterns to provide enhanced early warning;[395] and (6) UNOWAS' comprehensive analysis of farmer-herder dynamics broadly informed the work of all relevant UN agencies in-country and was followed up by a recent workshop that brought together farmer and herder representatives from different countries to discuss best practices for local level conflict resolution and prevention. A best practice document is expected to be released mid-2020 and will help guide the UN's prevention work going forward.[396]

FOOD SECURITY

As the deficiencies of the agricultural sector and increasing climate impacts are exacerbating food insecurity across Nigeria, counteracting these developments will be crucial to prevent these grievances from tipping over into protests or violence. UNDP is conducting a food security project that addresses the agricultural deficiencies to make food production systems in Nigeria more climate resilient. This involves introducing climate-smart agricultural practices to communities (to increase yield and build adaptive capacities), improving sustainable land and water management and helping develop better storage facilities.[397]

V

Lessons and Recommendations

Nigeria presents a complex terrain of interconnected social, political and economic factors, contributing to the risks of insecurity. This study acknowledges the difficulties in establishing direct, definitive causality when it comes to identifying the links between climate change and some of these conflict drivers. However, the findings indicate the importance of deepening our collective understanding of how environmental changes are contributing to risks, and how international, national, and local responses can either mitigate or exacerbate them. Drawing on the above findings and a range of interviews with experts in and on Nigeria, the following key lessons and recommendations are offered.

1 Local-level analysis and localized programming.

The links between climate change and violent conflict are complex and vary across contexts, both between and within countries. In the case of Nigeria, rising temperatures, more variable rainfall and extreme weather affect the North and the South differently — with different localized security impacts. Any risk-informed planning, therefore, needs to be based on careful, context specific analysis, taking into consideration subnational variations both of

climate change impacts and the institutional capabilities that exist in each area.[398] Equally, the UN's programmatic responses appear best placed at the local and state level as opposed to the federal, in order to: (1) match local climate-security dynamics with well-tailored localized responses; (2) engage with those levels of governance that hold major legislative and implementation power in Nigeria's federated structure; and (3) effectively use the leverage and knowledge that the UN already has at the local level. Engaging at subnational levels has already proven transformative in a number of UN adaptation and prevention projects and is a key lesson for future programming.[399]

2 Conflict-sensitive climate adaptation programming.

As this and other studies have described, climate change acts as a threat multiplier in many contexts, feeding into pre-existing and more structural conflict risks such as socioeconomic marginalization, widespread unemployment and inequality. Any approaches to climate adaptation, both by the Government and the UN system, need to take these conflict risks into account, making sure that adaptation measures do not protract or even exacerbate existing grievances. Instead, such programming needs to actively

UN Photo/Victoria Hazou

address tensions and inequalities, as experts point to the importance of trust building, social cohesion and inclusive governance as key factors for successful adaptation and peacebuilding.[400]

3 Climate-sensitive conflict prevention approaches.

Conflict prevention strategies also, however, need to account for the role of climate change in driving risks. This means looking at the ways in which environmental changes are affecting natural resources and livelihoods, changing the migration patterns of communities or driving urbanization. Addressing farmer-herder conflicts solely from a security perspective, for instance, might mitigate the violence in the short term but does not address the underlying root causes and ensure long-term prevention. Conflict prevention

approaches thus need to be informed by a climate lens, while more generally coordination should be enhanced between programmes that tackle climate change, development, security and peacebuilding issues in Nigeria.[401]

4 Develop predictive capacities.

The changes occurring in Nigeria far outstrip any predictions based on past trends. This is, in part, because of the combination of factors — rising temperatures, erratic rainfall, changing agricultural practices, and population growth. Greater investment in predictive systems that can model changes based on anticipated shifts in phenomena like rainfall, including how they might affect migratory patterns in the immediate term, would greatly assist prevention efforts around farmer-herder conflicts in particular.[402]

5 Governance matters.

Governance is a key mitigating factor between the impacts of climate change and violent conflict. It is the *Government's response* to climate-driven resource shortages or natural disasters that influences whether their consequences increase violence or not. Improved resource management, large-scale mobilization of funds and better service delivery are needed for Nigeria to better adapt and decrease its vulnerability to climate change.[403] Efficient governance, however, is not just done by the State, but is also a community responsibility. Looking for opportunities to build local resilience and governance capacities as well as strengthening local conflict resolution mechanisms is crucial in this regard, particularly in areas in the North where climate change is having a major impact and Government reach is limited.[404]

6 Promote and localize education.

Several experts point to the need for localized information campaigns to increase awareness around climate change and especially its links to violent conflict.[405] Making the information easily accessible, e.g. by translating material into local languages and collaborating with NGOs on the ground, are seen as important ways to promote education around this issue.[406] This also includes educating communities about sustainable resource management and climate-smart agricultural practices, helping farmers increase their productivity and better adapt to environmental changes.[407] Investments are needed to build more weather stations in order to be able to provide farmers and herders with meteorological information about changing rainfall patterns and help them better prepare for shifting conditions.[408]

7 Empower women and youth.

As the most affected by climate change and violent conflicts in Nigeria, women and youth should be meaningfully put at the forefront of possible solutions.[409] As one interviewee put it, young people are connected to the conflict in a number of ways, "as conflict actors, as victims, and as first responders," and should therefore be central to conflict resolution and prevention approaches. This entails their participatory inclusion in planning, programming and implementation matters, and enhanced cooperation with and financial support for youth- and women-led NGOs and civil society organizations.[410]

8 Mobilize climate-finance to reach remote and conflict-affected areas.

Across a wide range of experts, there was clear agreement that limited resources hampered both development and humanitarian responses. Many of the most vulnerable areas of northern Nigeria are still largely cut off from international support. Here, Nigeria offers an opportunity to mobilize climate-related financial support to also help reduce the risks of conflict.

III. Conclusions and Recommendations

Towards a Climate-Sensitive Approach to Conflict Prevention

Societies have been adapting to climate change for millennia, but today's trends underscore the IPCC's warning that the rate of change has created "novel risks often outside the range of experience."[411] In Bangladesh, farmers have dealt with riverine erosion for decades, but today are faced with unprecedented flows of water from melting glaciers, more severe cyclones and rising water tables, all of which have combined to create a catastrophic and rapid loss of livelihoods. Here, community coping mechanisms often are falling short, leaving people more likely to fall into conflict over scarce resources and causing huge population movements into strained, dangerous urban slums. Similarly, in Nigeria, long-standing agreements allowing herders to cross farmland have disintegrated as climate-driven desertification and changing rainfall patterns drive cattle into new territories and reduce arable land. The resulting loss of life is not only clear evidence of the climate-security link, but also a worrying signal that environmental change is rapidly outstripping local coping capacities.

The resulting loss of life is not only clear evidence of the climate-security link, but also a worrying signal that environmental change is rapidly outstripping local coping capacities.

These findings suggest that in climate-affected areas the past is a poor predictor of the future. Merely pointing to multidecade trends over the recent past may misrepresent how quickly today's conflict dynamics are moving, and importantly how they are interacting with social and political changes. In northern Nigeria, for example, a combination of desertification, changing agricultural practices, and rapid demographic growth have contributed to an acceleration of risks that could not be anticipated merely by examining past trends. Likewise, the rates of land loss in Bangladesh are likely to increase at speeds far outstripping even recent trends, as sea level rises are set to impact potentially 70 per cent of the country in the coming decades.

The evidence also indicates that climate change is experienced unevenly across regions, often with highly localized impacts that are not visible in national data. The way in which extreme weather is affecting the coastal areas of Bangladesh is not uniform but varies significantly depending on both the geographic area and the livelihoods impacted. At the same time, too much focus on the local dynamics may miss out important interlinkages to other regions: the rapid urbanization of Dhaka, for example, is driven in large part by climate-displaced people in fairly distant parts of the country. Highly localized effects of rising temperatures are experienced across much of northern Nigeria, as droughts, erratic rainfall and shifting water tables impact different communities in widely varying ways.

The case studies in this report point to some important ways in which governments and the UN are adapting to climate-driven risks, in particular efforts to improve the resilience of affected communities. However, maladaptation

also emerged as a significant risk factor: adaptation responses are often seen as unfairly distributed across communities, contributing to further tensions and grievances, while at times State-supported efforts to respond to disasters and improve infrastructure have caused unintended new disputes over resources. The UN's tendency to act in a supportive role of government-led planning and programming may mean it too is contributing to these risks.

Across a wide range of cases — and indeed in the expert roundtable convened during this project — the language used to describe climate risks differed significantly across constituencies and disciplines. Some national governments in particular resisted research findings linking climate change to insecurity, pointing instead to the crucial impact of the environment on development. In contrast, policymakers and practitioners with a conflict background have a strong tendency to see the more direct security impacts of climate change, using language of causality that can strike governments as alarmist and a distraction from the pressing issues of development and humanitarian aid.

These challenges point to the need for a renewed effort towards a robust empirical approach to climate-security, using cross-disciplinary scholarship to understand the indirect causal links and adaptation responses that avoid worsening the risks posed by environmental change. Specifically, the following recommendations are offered for UN policymakers, practitioners and their partners:

1 Analyse indirect impacts.

Looking for the direct connection between environmental change and conflict risks tends to simplify complex causal connections. As a wide range of scholarship has indicated, climate change creates mediated impacts, acting as a risk multiplier that affects socioeconomic conditions, livelihoods, and natural resources. These, in turn, may create new risks or heighten existing ones, often at a highly localized level that may be ignored by national level data. Using a human security lens may helpfully demonstrate

how increased vulnerabilities to socioeconomic shocks caused by climate change may contribute to greater conflict risks. Drawing on national and subnational sources of information, and emphasizing the connections between the two, will be required.

2 Focus on governance, not just scarcity.

Much of the scholarship on climate-security falls into neo-Malthusian arguments, framing the issue as one of dwindling resources overwhelmed by exponentially growing populations. While there is strong evidence that climate change is indeed driving resource scarcity and greater competition in some areas, a more constructive and empirically grounded approach focuses on how resources are governed and distributed. Supporting regional, national and subnational programming that effectively manages resources, especially in highly vulnerable populations, should be a key component of the UN's in-country planning, which should also include vulnerability mapping.

3 Build up foresight capacities.

Across a wide range of cases, past trends are proving poor indicators of the rate of change today. In places like the Sahel, population explosion is combining with shifting agricultural practices and changing weather patterns, creating highly dynamic fast-moving risks. Better predictive capacities are needed in the short term (e.g. to anticipate shifts in seasonal rainfall and the potential for crop failure in Nigeria), but also for longer-term planning (e.g. the likelihood that sea level rises that will affect nearly all of Bangladesh's population in the coming 50 years). Putting resources into more serious and medium-term foresight scenario-based capacities is crucial for the UN and its partners in order to be prepared.

4 Look for maladaptation and inequality.

Even the most well-planned climate response may have unintended consequences well beyond the immediate target. Yet, much of the government-led adaptation responses examined in the case studies in this report appeared to overlook the potential negative effects of programming. Harsh anti-grazing laws in Nigeria, for example, may limit the areas where farmer-herder conflicts breakout, but they also contribute to a deepening of the centre-periphery tensions that drive violence. More generally, government responses often tend to exacerbate underlying inequalities or are implemented without regard to extreme poverty and vulnerability. A "pro-poor" lens — advocated by some experts — would help mitigate those risks.

5 Adopt multi-scalar, cross-border responses.

Climate-driven change is occurring at global, regional, national, and highly local levels, all of which are related but manifest in very different ways. Indeed, all of the trends examined in these case studies are affecting regions rather than countries, requiring analysis and response that spans national borders. Unfortunately, the UN is highly reliant on national plans for its work and partnering mainly with governments for its programming. While recent reforms have emphasized the need for better regional strategic planning, this will need to be more meaningfully connected to the UN's work in-country and at the subnational level. Putting in place greater support for cross-border programming, which today is quite *ad hoc* and underfunded, will play an important role in settings that are experiencing large population movements in particular. It will also create greater connectivity between the UN's fairly abstract regional strategies and programming on the ground.

6 Build a common language for climate-security.

Climate-security discourse is inherently cross-disciplinary but has yet to develop a common vocabulary that all stakeholders are able to use uniformly. This is, in part, because many governments are concerned that an overt emphasis on security will push key issues of development and international aid into the background. More could be done to build a common language to describe the indirect and compounding effects of climate change on security risks, bringing together various disciplines and working towards agreement on terms. Importantly, scholars should find ways to describe so-called "technical" issues (e.g. changing water tables, riverine erosion and salinization) in ways that are more likely to generate political action. It will also be important to understand and shape the legal impacts of the language around climate change: terms like "climate refugee," for example, may describe the phenomenon of displacement due to climate-driven changes, but may also run afoul of existing refugee law.

7 Prioritize and bring climate-security into the broader climate discussion.

Within the UN, there has been some resistance to "securitizing" climate — a fear that a greater focus on security will distract and potentially disincentivize engagement on the global agenda to reduce emissions and prevent further global warming. However, as laid out in the Secretary-General's prevention agenda and the twin Sustaining Peace resolutions, prevention must be conducted in a holistic cross-cutting manner across the entire UN system. This means seeing the interconnected nature of climate change and conflict risks. Instead of worrying about potential interference between agendas, the UN should look for synergies between prevention and adaptation.

8 Strengthen knowledge management and build an evidence base.

Much of the work on the linkages between climate change and security is done by technical agencies, often in their respective silos and without making lessons learned available to others. To generate a shared understanding of climate-related security risks and effective response strategies, it is important to build an evidence base on climate change effects on security and collect good practices to close the policy-practice loop.

One challenge in the climate-security field is in translating the many disparate fields of work into a coherent framework of action. In December 2017, the UN Security Council held an Arria-formula dialogue on climate-security in which the Center for Climate and Security presented a Responsibility to Prepare framework. While the Council has yet to formally discuss such a framework, both the original proposal and the more recent Responsibility to Prepare and Prevent (R2P2) offer an extremely useful set of recommendations that could be adapted to the UN as a whole. Based on the above analysis — and looking to synthesize the above recommendations into a single framework — the following modifications of R2P2 for the UN should be considered:

1 Adopt a "Responsibility to Prepare and Prevent" framework across the UN.

a. **Routinization:** Effectively addressing climate-security risks requires that they be routinely analysed across political, development, and humanitarian work, not treated as an "add on" to other issues. Regular inclusion of

climate-security indicators in planning documents and requirements for climate-security information in UN analysis would help bring the issue into the daily bloodstream.

b. **Institutionalization:** Making climate-security part of the UN's institutional work does not require new layers of bureaucracy, but it does mean adapting current processes to allow climate-security considerations to become part of existing structures. For example, a climate-security aspect to the UN's Regional Monthly Reviews would be an important step. Multi-agency consideration of climate and would align with the Secretary-General's priority on cross-cutting prevention work.

c. **Elevation:** Climate-security should be the responsibility of the most senior personnel within the UN. This could be achieved by including climate-security in senior officials' compacts with the Secretary-General, the terms of reference of Resident Coordinators and the Secretariat's reporting to the Security Council. Building on the Security Council's openness to hearing climate-security briefings on the Lake Chad area, the Secretariat should push for more frequent inclusion of the issue in briefings on other parts of the world.

d. **Integration:** Climate change often affects security risks in indirect ways, through socioeconomic impacts, livelihoods, health, natural resource competition and access to basic goods. This means that climate-security cannot be isolated within a few departments but should be considered across the political, humanitarian, development and human rights work of the UN. The creation of the Climate-Security Mechanism (CSM) is an important step in that regard and should receive amplified support. Greater resources for the CSM, and possibly the inclusion

of or more formalized cooperation with OCHA, would be helpful. Looking for greater inter-agency cooperation around climate-security at planning and programmatic levels should also be a priority.

e. **Contingencies:** The unpredictability of climate risks means that traditional scenario mapping is unlikely to accurately anticipate the kinds of change taking place. Accurate foresight is particularly challenging when climate is indirectly affecting security risks. This creates a significant danger that the UN's adaptation responses may produce unintended consequences. As seen in the case studies in this report, maladaptation can dramatically increase inequalities, directly fuel conflicts, and may work to undermine many core governance goals. Based on improved foresight capacities, the UN could more clearly implement a conflict-sensitive approach to climate and a climate-sensitive approach to conflict prevention.

f. **Rapid response:** Predicting the impacts of climate change on security is extraordinarily difficult and tends to defy traditional linear models. In many cases, low probability/high impact risks are overlooked by the UN system, which instead focuses on the most immediately visible crises. It is therefore especially important that the UN and its partners are able to react quickly to new events, possibly by modifying existing early warning systems to be more sensitive to climate-related risks.

Ultimately, these recommendations should be geared at making climate-security a priority for the UN, and for it to be seen as a crucial lens through which the UN takes forward its broad prevention agenda.

References

1   Sebastian Einsiedel et al, *Civil War Trends and the Changing Nature of Armed Conflict* (Tokyo: United Nations University, 2017), https://cpr.unu.edu/civil-war-trends-and-the-changing-nature-of-armed-conflict.html

2   International Institute for Security Studies, *The Armed Conflict Survey 2019* (London: IISS, 2019), https://www.iiss.org/publications/armed-conflict-survey/2019/armed-conflict-survey-2019

3   Johan Schaar, *The Relationship Between Climate Change and Violent Conflict* (Oslo: Swedish International Development Agency, 2018); Malin Mobjörk et al., *Climate-related Security Risks. Towards an Integrated Approach* (Stockholm: SIPRI, 2016); Caitlin E. Werrell et al., *The Arab Spring and Climate Change* (Washington DC: Center for American Progress, 2013).

4   Neil Adger et al., "Human security," in *Climate Change 2014: Impacts, Adaptation and Vulnerability: Report of the Intergovernmental Panel on Climate Change*, ed. C. B. Field et al., (Cambridge: Cambridge University Press, 2014), 775–791.

5   Gwynne Dyer, *Climate Wars: The fight for survival as the world overheats* (London: One World Publications, 2010).

6   Ashley Moran et al., *The Intersection of Global Fragility and Climate Risks* (Washington DC: USAID, 2018).

7   The Climate-Security Mechanism includes staff from the UN Department of Political and Peacebuilding Affairs, the UN Development Programme and the UN Environmental Programme.

8   Dan Smith and Janani Vivekananda, *A Climate of Conflict: The Links between Climate Change, Peace and War* (London: International Alert, 2007).

9   This proposal was developed in line with the priorities laid out in the UK's Conflict, Security and Stability Fund.

10   Cullen Hendrix and Sarah M. Glaser, "Trends and Triggers: Climate, Climate Change and Civil Conflict in Sub-Saharan Africa," *Political Geography* 26, 6 (2007): 695-715.

11   But see Craig A. Anderson and Matt Delisi, "Implications of Global Climate Change for Violence in Developed and Developing Countries," in *The Psychology of Social Conflict and Aggression*, ed. J. Forgas et al. (New York: Psychology Press, 2011). [Finding that increased heat levels in themselves lead to increased levels of aggression and violence.]

12   Janani Vivekananda et al., "Climate resilience in fragile and conflict-affected societies: concepts and approaches," *Development in Practice* 24, 4 (2014): 487-501; Jürgen Scheffran et al., "Theories and Models of Climate-Security Interaction: Framework and Application to a Climate Hot Spot in North Africa," in *Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability*, es. J. Scheffran et al. (Berlin: Springer, 2012), 91–131; Jürgen Scheffran, et al., "Climate Change and Violent Conflict," *Science* 336 (2012): 869–871; Ole Magnus Theisen et al., "Is Climate Change a Driver of Armed Conflict?," *Climatic Change* 117, 3 (2013): 613–625; Nils Petter Gleditsch, "Special Issue on Climate Change and Conflict," *Journal of Peace Research* 49, 163 (2012): 1–145.

13   For a good and recent review of some of the most important literature, see Joshua Busby, *The Field of Climate and Security: A Scan of the Literature* (New York: Social Science Research Council, 2019).

14   See, e.g., Roland Paris, "Human Security: Paradigm Shift or Hot Air?," *International Security* 26, 2 (2001): 87-102.

15   See, e.g., Joshua Busby et al., "In Harm's Way: Climate Security Vulnerability in Asia," *World Development* 112 (2018): 88—118; P.K. Krishnamurthy et al., "A Methodological Framework for Rapidly Assessing the Impacts of Climate Risk on National-Level Food Security Through a Vulnerability Index," *Global Environmental Change* 25 (2014): 121-132.

16   H-M Füssel, "Vulnerability: A Generally Applicable Conceptual Framework for Climate Change Research," *Global Environmental Change* 17, 2 (2007): 155-167. [NB: The IPCC defines security in terms of loss of life due to extreme climate-related events.]

17   See also W.N Adger et al., "Human Security," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability*, ed. C.B. Field et al., (Cambridge: Cambridge University Press, 2014).

18   Joshua Busby, *The Field of Climate and Security: A Scan of the Literature* (New York: Social Science Research Council, 2019).

19   Nina von Uexkill et al., "Civil Conflict Sensitivity to Growing-Season Drought" *Proceedings of the National Academy of Sciences* 113, 48 (2016): 12391-12396.

20   Jaroslav Tir and Douglas M. Stinnett, "Weathering Climate Change: Can Institutions Mitigate International Water Conflict?," *Journal of Peace Research* 49, 1 (2012): 211-225.

21   Solomon Hsiang et al., "Quantifying the Influence of Climate on Human Conflict," *Science* 341 (2013); Marshall B. Burke et al., "Warming Increases the Risk of Civil War in Africa," *Proceedings of the National Academy of Sciences* 106, 49 (2009): 20670-20674.

22   Paolo Vineis, et al., "Climate Change Impacts on Water Salinity and Health," *Journal of Epidemiology and Global Health* 1, 1 (2011): 1-10.

23   Vincent Roth, et al., "Effects of Climate Change on Water Resources in the Upper Blue Nile Basin of Ethiopia," *Heliyon* 4, 9 (2018); José A. Marengo et al, "Climate Change and Water Resources," in *Waters of Brazil*, ed. Carlos E. de Mattos Bicudo et al. (Basel: Springer, 2017): 171-186.

24   Alex Evans, "Resource Scarcity, Climate Change, and Violent Conflict," *WWF/Oxfam Discussion Papers* (London: WWF and Oxfam, 2011).

25   Rupert Seidl et al., "Forest Disturbances Under Climate Change," *Nature Climate Change* 7 (2017): 395–402.

26   Clionadh Raleigh and Dominic Kniveton, "Come Rain or Shine: An Analysis of Conflict and Climate Variability in East Africa," *Journal of Peace Research* 49, 1 (2012): 51-64; Cullen S. Hendrix and Idean Salehyan, "Climate Change, Rainfall, and Social Conflict in Africa," *Journal of Peace Research* 49, 1 (2012): 35-50.

27   Marshal B. Burke et al., "Warming Increases the Risk of Civil War in Africa," *Proceedings of the National Academy of Sciences* 106, 49 (2009).

28   Christopher K. Butler and Scott Gates, "African Range Wars: Climate, Conflict, and Property Rights," *Journal of Peace Research* 49, 1 (2012): 23-34.

29   Clionadh Raleigh and Henrik Urdal, "Climate Change, Environmental Degradation and Armed Conflict," *Political Geography* 26, 66 (2007): 674-694.

30   Katharine J. Mach et al., "Climate as a Risk Factor for Armed Conflict," *Nature* 571 (2019): 195.

31   Halvard Buhaug et al., "Climate Variability, Food Production Shocks, and Violent Conflict in Sub-Saharan Africa," *Environmental Research Letters* 10 (2015); Goytom Abraha Kahsay and Lars Gårn Hansen, "The Effect of Climate Change and Adaptation Policy on Agricultural Production in Eastern Africa," *IFRO Working Papers* 8 (2014)

32   Cullen Hendrix and Sarah M. Glaser, "Trends and Triggers: Climate, Climate Change and Civil Conflict in Sub-Saharan Africa," *Political Geography* 26, 6 (2007): 695-715.

33   Nina von Uexküll, "Sustained Drought, Vulnerability and Civil Conflict in Sub-Saharan Africa," *Political Geography* 43 (2014): 16–26.

34   Sarah Johnstone and Jeffrey Mazo, "Global Warming and the Arab Spring," *Survival* 53, 2 (2011): 11-17.

35   Clionadh Raleigh et al., "The Devil is in the Details: An Investigation of the Relationships Between Conflict, Food Price and Climate Across Africa," *Global Environmental Change* 32 (2015): 187-199; P. Rowhani et al., "Malnutrition and Conflict in East Africa: The Impacts of Resource Variability on Human Security," *Climatic Change* 105 (2011): 207-222; Martin Halle, *How Food Prices Link Environmental Constraints to Sovereign Credit Risk* (Nairobi: United Nations Environmental Programme, 2009).

36   Alexander Bollfrass and Andrew Shaver, "The Effects of Temperature on Political Violence: Global Evidence at the Subnational Level," *PLOS One* 10, 5 (2015): 1-13.

37   Benjamin T. Jones et al., "Food Scarcity and State Vulnerability: Unpacking the Link Between Climate Variability and Violent Unrest," *Journal of Peace Ressearch* 54, 3 (2017): 335-350; Ole Magnus Theisen et al., "Climate Wars? Assessing the Claim That Drought Breeds Conflict," *International Security* 36, 3 (2011): 79-106.

38   Ole Magnus Theisen, "Climate Clashes? Weather Variability, Land Pressure and Organized Violence in Kenya 1989-2004," *Journal of Peace Research* 49, 1 (2012): 81-96.

39   For this critique, see Nils Petter Gleditsch and Henrik Urdal, "Ecoviolence? Links Between Population Growth, Environmental Scarcity and Violent Conflict in Thomas Homer-Dixon's Work," *Journal of International Affairs* 56, 1 (2002): 283-302.

40   Jean-François Maystadt et al., "Local Warming and Violent Conflict in North and South Sudan," *Journal of Economic Geography* 15, 3 (2015): 649–671.

41   Patrick Meier, Doug Bond, and Joe Bond, "Environmental Influences on Pastoral Conflict in the Horn of Africa," *Political Geography* 26, 6 (2007): 716-735; Sebastian van Baalen and Malin Mobjörk, *A Coming Anarchy? Pathways from Climate Change to Violent Conflict in East Africa* (Stockholm: Stockholm University, 2016); Janpeter Schilling et al., "On Raids and Relations: Climate Change and Pastoral Conflict in Northern Kenya," in *Climate Change and Conflict: Where to for Conflict Sensitive Climate Adaptation in Africa?*, ed. Salome Bronkhorst and Urmilla Bob (Berlin: Berliner Wissenschaftsverlag, 2014): 241-268.

42   See, e.g., Janpeter Schilling et al., "Climate Change and Land Use Conflicts in Northern Africa," *Nova Acta Leopoldina* 112, 384 (2010): 173-18; Anthony Nyong, "Climate-Related Conflicts in West Africa," *Environmental Change and Security Program Report* 12 (2007): 36-43.

43   High Representative and the European Commission to the European Council, *Climate Change and International Security* (Brussels: European Commission, 2008), http://register. consilium.europa.eu/doc/srv?l=EN&f=ST%207249%20 2008%20INIT.

44   Intergovernmental Panel on Climate Change, *First Assessment Report: Working Group II*, (Geneva: IPCC, 1990), https://www.ipcc.ch/site/assets/uploads/2018/03/ipcc_far_ wg_I_full_report.pdf ["the gravest effects of climate change may be those on human migration as millions are displaced by shoreline erosion, coastal flooding and severe drought"]; see also, Betsy Hartmann, "Rethinking Climate Refugees and Climate Conflict: Rhetoric, Reality and the Politics of Policy Discourse," *Journal of International Development* 22, 2 (2010); Giovanni Bettini, "Climate Barbarians at the Gate? A Critique of Apocalyptic Narratives on 'Climate Refugees,'" *Geoforum* 45 (2013): 63-72.

45   Jürgen Scheffran et al., "Migration as a Contribution to Resilience and Innovation in Climate Adaptation: Social Networks and Co-development in Northwest Africa," *Applied Geography* 33 (2011): 119–127; Robert Muggah, *No refuge: The crisis of refugee militarization in Africa* (London: Zed Books, 2006); Rafael Reuveny, "Ecomigration and Violent Conflict: Case Studies and Public Policy Implications," *Human Ecology* 36 (2008): 1–13.

46   Michael Brzoska and Christiane Fröhlich, "Climate Change, Migration and Violent Conflict: Vulnerabilities, Pathways and Adaptation Strategies," *Migration and Development* 5, 2 (2016): 190-210.

47   Halvard Buhaug et al., *Sensitivity Analysis of Climate Variability and Civil War* (Oslo: Peace Research Institute Oslo, 2010).

48   Courtland Adams et at, "Sampling Bias in Climate-Conflict Research," *Nature Climate Change* 8 (2018): 200-203.

49   Mathieu Couttenier and Raphael Soubeyran, "Drought and Civil War in Sub-Saharan Africa," *The Economic Journal* 124 (2013): 201-244.

50   See, e.g. Philipp Heinrigs, *Security Implications of Climate Change in the Sahel Region: Policy Considerations* (Paris: Organisation for Economic Cooperation and Development, 2010) [suggesting that climate change is of secondary importance to political and historical factors influencing conflict].

51   Halvard Buhaug, "Climate-Conflict Research: Some Reflections on the Way Forward," *WIREs Climate Change* 6 (2015): 269-275.

52   Halvard Buhaug, "Climate Not to Blame for African Civil Wars," *Proceedings of the National Academy of Sciences* 107, 38 (2010).

53   John O'Loughlin et al., "Effects of Temperature and Precipitation Variability on the Risk of Violence in Sub-Saharan Africa, 1980–2012," *Proceedings of the National Academy of Sciences* 111, 47 (2014); Tor A. Benjaminsen, "Does Climate Change Drive Land-Use Conflicts in the Sahel?," *Journal of Peace Research* 49, 1 (2012): 97-111.

54   Frank Witmer et al, "Subnational Violent Conflict Forecasts for Sub-Saharan Africa, 2015–65, Using Climate-Sensitive Models," *Journal of Peace Research* 54, 2 (2017): 175–92.

55   Thomas Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security* 19, 1 (1991): 5-40.

56   Kendra Sakaguchi et al., "Climate Wars? A Systematic Review of Empirical Analyses on the Links between Climate Change and Violent Conflict," *International Studies Review* 19, 4 (2017): 622–645; Daniel Pearson and Peter Newman, "Climate Security and a Vulnerability Model for Conflict Prevention: A Systematic Literature Review Focusing on African Agriculture," *Sustainable Earth* 2 (2019).

57   Lukas Rüttinger, *Climate and Fragility Risks: The Global Perspective* (Kanagawa, Japan: Institute for Global Environmental Strategies, 2017); Halvard Buhaug, "Climate Change and Conflict: Taking Stock," *Peace Economics, Peace Science and Public Policy* 22, 4 (2016);

58   Katharine J. Mach et al., "Climate as a Rrisk Factor for Armed Conflict," *Nature* 571 (2019): 195.

59   Conor Devitt and Richard SJ Tol, "Civil War, Climate Change, and Development: A Scenario Study for Sub-Saharan Africa," *Journal of Peace Research* 49, 1 (2012): 129-145.

60   See also, Vally Koubi et al., "Climate Variability, Economic Growth, and Civil Conflict," *Journal of Peace Research* 49, 1 (2012): 113–127 [finding a link between economic growth and conflict, though also finding that reduced precipitation does not affect economic growth].

61   Drago Bergholt and Païvi Lujala, "Climate-related Natural Disasters, Economic Growth, and Armed Civil Conflict," *Journal of Peace Research* 49, 1 (2012): 147–162; Paul Collier et al., "Beyond Greed and Grievance: Feasibility and Civil War," *Oxford Economic Papers* 61, 1 (2009): 1–27; Daron Acemoglu et al., "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," *Quarterly Journal of Economics* 117, 4 (2002): 1231–1294; John L. Gallup et al., "Geography and economic development," *International Regional Science Review* 22, 2 (1999): 179–232.

62   Janani Vivekananda et al., "Climate Resilience in Fragile and Conflict-Affected Societies: Concepts and Approaches," *Development in Practice* 24, 4 (2014): 487-501.

63   See, e.g., Tobias Ide et al., "On Exposure, Vulnerability and Violence: Spatial Distribution of Risk Factors for Climate Change and Violent Conflict Across Kenya and Uganda," *Political Geography* 43 (2014): 68-81.

64   See, Andrew Mitchell, *Risk and Resilience: From Good Idea to Good Practice* (Paris: Organisation for Economic Cooperation, 2013); Eran Feitelson and Amit Tubi, "A Main Driver or an Intermediate Variable? Climate Change, Water, and Security in the Middle East," *Global Environmental Change* 44 (2017): 39-48.

65   Janani Vivekananda et al., "Climate Resilience in Fragile and Conflict-Affected Societies: Concepts and Approaches," *Development in Practice* 24, 4 (2014): 491.

66   Janani Vivekananda et al., *Shoring up Stability: Addressing Climate and Fragility Risks in the Lake Chad Region* (Berlin: Adelphi, 2019).

67   Daniel Pearson and Peter Newman, "Climate Security and a Vulnerability Model for Conflict Prevention: A Systematic Literature Review Focusing on African Agriculture," *Sustainable Earth* (2019) [finding that 70% of climate-security research references vulnerability]; Joshua Busby et al., "In Harm's way: Climate Security Vulnerability in Asia," *World Development* 112 (2018): 88-118.

68   Ole Mertz et al., "Climate Factors Play a Limited Role for Past Adaptation Strategies in West Africa," *Ecology and Society* 15, 4 (2010): 25.

69   Hanne Fjelde and Nina von Uexkull, "Climate Triggers: Rainfall Anomalies, Vulnerability and Communal Conflict in Sub-Saharan Africa," *Political Geography* 31, 7 (2012): 444-453.

70   Thomas Tanner et al., "Livelihood Resilience in the Face of Climate Change," *Nature Climate Change* 5 (2015): 23-26.

71   Noah S. Diffenbaugh and Marshall Burke, "Global Warming has Increased Global Economic Inequality," *Proceedings of the National Academy of Sciences* 116, 20 (2019): 9808-9813.

72   Carl-Freidrich Schleussner et al., "Armed Conflict Risks Enhanced by Climate-Related Disasters in Ethnically Fractionalized Countries," *Proceedings of the National Academy of Sciences* 113, 33 (2016): 9216-9221; S. Nazrul Islam and John Winkel, "Climate Change and Social Inequality," *United Nations Department of Social and Economic Affairs Working Paper* 152 (New York: UN DESA, 2017), https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf.

73 Katharine J. Mach et al., "Climate as a Risk Factor for Armed Conflict," *Nature* 571 (2019): 195.

74 Houria Djoudi et al., "Beyond Dichotomies: Gender and Intersecting Inequalities in Climate Change Studies," *Ambio* 45 (2016): 248–262.

75 Andrew D. King and Luke J. Harrington, "The Inequality of Climate Change from 1.5 to 2 Celsius of Global Warming," *Geophysical Research Letters* 45 (2018): 5030-5033; Luke J. Harrington et al., "Poorest Countries Experience Earlier Anthropogenic Emergence of Daily Temperature Extremes," *Environmental Research Letters* 11, 5 (2016); Irina Mahlstein et al., "Early Onset of Significant Local Warming in Low Latitude Countries," *Environmental Research Letters* 6, 3 (2011).

76 Halvard Buhaug, "Climate Change and Conflict: Taking Stock," *Peace, Science and Public Policy* 22, 4 (2016): 331-338.

77 Dennis Tänzler et al., *Building Resilience by Linking Climate Change Adaptation, Peacebuilding and Conflict Prevention* (Berlin: Adelphi, 2018)

78 Florian Krampe, *Climate Change, Peacebuilding and Sustaining Peace* (Stockholm: SIPRI, 2019), http://www.diva-portal.org/smash/get/diva2:1336029/FULLTEXT01.pdf; Richard Matthew, "Integrating Climate Change into Peacebuilding," *Climatic Change* 123 (2014): 83–93.

79 Jon Barnett, "Global Environmental Change: Climate Resilient Peace?" *Progress in Human Geography* 43, 5 (2018): 927-936.

80 Karolina Eklöw and Florian Krampe, *Climate-Related Security Risks and Peacebuilding in Somalia* (Stockholm: SIPRI, 2019).

81 Case studies were conducted by the UN's Peace and Development Advisors in 11 countries as part of a UNDP-Folke Bernadotte supported project on climate-security. Some of the cases were discussed at a UNU-CPR hosted expert roundtable on 10 March 2020 as part of this project.

82 H.E. Her Excellency Sheikh Hasina, "Inaugural Speech by Sheikh Hasina," Dara, 14 November 2011. https://daraint.org/2011/11/14/2726/inauguration-of-the-climate-vulnerable-forum-2011/; See also United Nations Office for Disaster Risk Reduction, "Bangladesh Declares Climate Change a "Planetary Emergency," UNDRR, 15 November 2019, https://reliefweb.int/report/world/bangladesh-declares-climate-change-planetary-emergency.

83 G.M. Monirul Alam et al., "Vulnerability to Climatic Change in Riparian Char and River-Bank Households in Bangladesh: Implication for Policy, Livelihoods and Social Development," *Ecological Indicators* 72 (2017): 23-32.

84 Fakrul Islam, "Riverbank Erosion Displacees in Bangladesh: Need for Institutional Response and Policy Intervention," *Bangladesh Journal of Bioethics* 2, 2 (2011): 4-19; Environment and GIS Support Project for Water Sector Planning, *Riverine Chars in Bangladesh: Environmental Dynamics and Management Issues* (Dhaka: University Press Limited, 2000); Saleem-ul Huq et al., "Vulnerability of Bangladesh to Climate Change and Sea Level Rise," in *Climate Change and World Food Security*, ed. Thomas Downing (Berlin: Springer, 1996).

85 Sonja Ayeb-Karlsson et al., "A People-Centered Perspective on Climate Change, Environmental Stress, and Livelihood Resilience in Bangladesh," *Sustainable Science* 11 (2016): 679-694.

86 Susmita Dasgupta et al., "Climate Proofing Infrastructure in Bangladesh: The Incremental Cost of Limiting Future Flood Damage," *Journal of Environment and Development* 20, 2 (2011): 167-190.

87 Sonja Ayeb-Karlsson et al., "A People-Centered Perspective on Climate Change, Environmental Stress, and Livelihood Resilience in Bangladesh," *Sustainable Science* 11 (2016): 679-694; Benjamin K. Sovacool, "Bamboo Beating Bandits: Conflict, Inequality, and Vulnerability in the Political Ecology of Climate Change Adaptation in Bangladesh," *World Development* 102 (2018): 183-194.

88 M. Q. Mirza, et al., "Trends and Persistence in Precipitation in the Ganges, Brahmaputra and Meghna Basins in South Asia," *Hydrological Sciences Journal* 43 (1998): 845-858; Thomas Tanner et al., *ORCHID: Piloting Climate Risk Screening in DFID Bangladesh* (Sussex, UK: Institute for Development Studies, 2007).

89 G.M. Monirul Alam et al., "Vulnerability to Climatic Change in Riparian Char and River-Bank Households in Bangladesh: Implication for Policy, Livelihoods and Social Development," *Ecological Indicators* 72 (2017): 23-32.

90 The average is 25 per cent, but up to 70 per cent in years of extreme weather. Ministry of Environment and Forest, *National Adaptation Programme* 2005, (Dhaka: Government of the People's Republic of Bangladesh, 2005), https://unfccc.int/resource/docs/napa/ban01.pdf; see also, M.A. Richard, "Climate Change and Human Security," in *Climate Change: What it Means for Us, Our Children and Our Grandchildren*, ed. Joseph F.C. DiMento and Pamela Doughman (Cambridge MA: MIT Press, 2007): 161-180.

91 Susmita Dasgupta et al., "Climate Proofing Infrastructure in Bangladesh: The Incremental Cost of Limiting Future Flood Damage," *Journal of Environment and Development* 20, 2 (2011): 167-190.

92 G.M. Monirul Alam et al., "Vulnerability to Climatic Change in Riparian Char and River-Bank Households in Bangladesh: Implication for Policy, Livelihoods and Social Development," *Ecological Indicators* 72 (2017): 23-32.

93 See, Lopamudra Banerjee, "Effects of Flood on Agricultural Productivity in Bangladesh," *Oxford Development Studies* 38, 3 (2010): 339-356 [noting that extreme flooding has a far more significant and long-term effect on production].

94 Start Fund Bangladesh, *Bangladesh Riverbank Erosion*, (Dhaka: Start Network, 2018), https://reliefweb.int/sites/reliefweb.int/files/resources/190321%20Start%20Fund%20Riverbank%20Erosion%20Disaster%20Summary%20Sheet.pdf

95 K.M. Bahauddin, "Climate Change-Induced Migration in Bangladesh: Realizing the Migration Process, Human Security and Sustainable Development," *Global Sustainability Development Report* (New York: UN DESA, 2016).

96 Sujan Saha, "Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh," in *Climate Change, Human Security and Violent Conflict*, ed. Jürgen Scheffrran et al., (New York: Springer, 2012), 595-611.

97 K.M. Bahauddin, "Climate Change-Induced Migration in Bangladesh: Realizing the Migration Process, Human Security and Sustainable Development," *Global Sustainability Development Report* (New York: UN DESA, 2016).

98 Ainun Nishat and Nandan Mukherjee, "Climate Change Impacts, Scenario and Vulnerability," in *Climate Change Adaptation Actions in Bangladesh*, ed. Rajib Shawet al. (New York: Springer, 2013), 15-42; *see also* Ministry of Environment, Forest and Climate Change, *Third National Communication of Bangladesh to the United Nations Framework Convention on Climate Change* (Dhaka: Government of the People's Republic of Bangladesh, 2018), https://unfccc.int/sites/default/files/resource/TNC%20Report%20%28Low%20Resolation%29%2003_01_2019.pdf

99 S. A. Haque, "Salinity Problems and Crop Production in Coastal Regions of Bangladesh," *Pakistan Journal of Botany* 38, 5 (2006): 1359-1365.

100 Tariq Masood Ali Khan et al., "Recent Sea Level and Sea Surface Temperature Trends Along the Bangladesh Coast in Relation to the Frequency of Intense Cyclones," *Marine Geodesy* 23,2 (2000): 103-116.

101 Aneire Khan, et al., "Drinking Water Salinity and Maternal Health in Coastal Bangladesh: Implications of Climate Change," *Environmental Health Perspectives* 119, 9 (2011).

102 Shibly Sadik, et al., "Event-Consequence Chain of Climate Change-Induced Salinity Intrusion in Sundarbans Mangrove Socioecological System, Bangladesh," in *Science and Technology in Disaster Risk Reduction in Asia: Potentials and Challenges*, ed. Sajib Shaw et al. (Dhaka: Gobeshona, 2018).

103 Ministry of Environment and Forest (2012) [on file with author].

104 Susmita Dasgupta et al., "Climate Change, Soil Salinity and the Economics of High-Yield Rice Production in Coastal Bangladesh," *World Bank Policy Research Working Paper* 7140 (Washington DC: World Bank, 2014).

105 M. M. Rahman and M. Ahsan, "Salinity Constraints and Agricultural Productivity in Coastal Saline Area of Bangladesh. Soil Resources in Bangladesh: Assessment and Utilization," Proceedings of the Annual Workshop on Soil Resources (Conference Report, Dhaka, 14-15 February, 2001); A. Hassan and A.R. Shah, "Impact of Sea Level Rise on Suitability of Agriculture and Fisheries," (Dhaka: Center for Environmental and Geographic Information Services, 2006); Timothy Thomas et al., "Agriculture and Adaptation in Bangladesh: Current and Projected Impacts of Climate Change," *IFPRI Discussion Paper* 1281 (Washington DC: International Food Policy Research Institute, 2013)

106 Susmita Dasgupta et al., "Climate Change, Soil Salinity and the Economics of High-Yield Rice Production in Coastal Bangladesh," *World Bank Policy Research Working Paper* 7140 (Washington DC: World Bank, 2014).

107 UNICEF, *A Gathering Storm: Climate Change Clouds the Future of Children in Bangladesh* (New York: UNICEF, 2019).

108 Joyce Chen and Valerie Mueller, "Coastal Climate Change, Soil Salinity and Human Migration in Bangladesh," *Nature Climate Change* 8, 16 (2018).

109 Ainun Nishat and Nandan Mukherjee, "Climate Change Impacts, Scenario and Vulnerability," in *Climate Change Adaptation Actions in Bangladesh*, ed. Rajib Shaw et al. (New York: Springer, 2013), 15-42.

110 A. Ali, "Vulnerability of Bangladesh to Climate Change and Sea Level Rise through Tropical Cyclones and Storm Surges," *Water, Air, and Soil Pollution* 92 (1996): 171-179.

111 Ibid.

112 Ibid.

113 Ibid; James Elsner et al., "The Increasing Intensity of the Strongest Tropical Cyclones," *Nature* 455 (2008): 92–95; P.J. Webster et al., "Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment," *Science* 309 (2005): 1844–1846; K.A. Emanuel, "Increasing Destructiveness of Tropical Cyclones Over the Past 30 years," *Nature* 436, 686–688 (2005).

114 T. Knutson et al., "Tropical Cyclones and Climate Change," *Nature Geoscience* 3 (2010): 157–163.

115 D. Bhaskar Rao et al., "Trends in the Genesis and Landfall Locations of Tropical Cyclones Over the Bay of Bengal in the Current Global Warming Era," *Journal of Earth Systems Science* (2019): 194; Sunando Bandyopadhyay et al., "Cyclonic Storm Landfalls in Bangladesh, West Bengal and Odisha, 1877–2016: A Spatiotemporal Analysis," *World Bank Policy Research Working Papers* 8316 (Washington DC: World Bank, 2018)

116 D. Bhaskar Rao et al., "Trends in the Genesis and Landfall Locations of Tropical Cyclones Over the Bay of Bengal in the Current Global Warming Era," *Journal of Earth Systems Science* (2019): 194.

117 E. Alam et al., "Climate Change Impacts on the Coastal Zones of Bangladesh: Perspectives on Tropical Cyclones, Sea Level Rise, and Social Vulnerability," in *Bangladesh I: Climate Change Impacts, Mitigation and Adaptation in Developing Countries*, ed. Md Islam and Andre van Amstel (New York Springer, 2018).

118 Mohamed Fazlul Karim and Nobuo Mimura, "The Impacts of Climate Change and Sea-Level Rise on Cyclonic Storm Surge Floods in Bangladesh," *Global Environmental Change* 18 (2008): 490-500.

119 Susmita Dasgupta and David Wheeler, "The Cyclone's Shadow: Historical Storm Impacts and Population Displacements in Bangladesh, West Bengal and Odisha," *World Bank Policy Research Working Papers* 8316 (Washington DC: World Bank, 2018).

120 Gardiner Harris, "Borrowed Time on Disappeared Land," *The New York Times*, 28 March 2014, https://www.nytimes.com/2014/03/29/world/asia/facing-rising-seas-bangladesh-confronts-the-consequences-of-climate-change.html.

121   Maia A. Call et al., "Disruption, Not Displacement: Environmental Variability and Temporary Migration in Bangladesh," *Global Environmental Change* 46 (2017): 157-165; see also, Xin Lu et al., "Unveiling Hidden Migration and Mobility Patterns in Climate Stressed Regions: A Longitudinal Study of Six Million Anonymous Mobile Phone Users in Bangladesh," *Global Environmental Change* 38 (2016): 1-7.

122   Bishawijt Mallick and Joachim Vogt, "Cyclone, Coastal Society and Migration: Empirical Evidence from Bangladesh," *International Development Planning Review* 34, 3 (2012)

123   Katha Kartiki, "Climate Change and Migration: A Case Study from Rural Bangladesh," *Gender & Development* 19, 1 (2011): 23-38.

124   Organisation for Economic Cooperation and Development, *States of Fragility Report 2016* (Paris: OECD, 2016); United Nations and the World Bank, *Pathways for Peace : Inclusive Approaches to Preventing Violent Conflict* (Washington, DC: World Bank, 2018).

125   See, e.g., Ragnhild Nordas and Nils Petter Gleditsch, "Climate Change and Conflict," *Political Geography* 26, 6 (2007): 626-638.

126   Sarah Dalrymple et al., *Climate Change and Security in Bangladesh: A Case Study* (London: Saferworld, 2009); Sujan Suha, "Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh," in *Climate Change, Human Security and Violent Conflict*, ed. Jürgen Scheffrran et al., (New York: Springer, 2012): 595-611.

127   Rajkumari Chandra Roy, *Land Rights of the Indigenous Peoples of the Chittagong Hill Tracts, Bangladesh* (Copenhagen: International Work Group for Indigenous Affairs, 2000).

128   Pranab Kumar Panday and Ishtiaq Jamil, "Conflict in the Chittagong Hill Tracts of Bangladesh: An Unimplemented Accord and Continued Violence" in *Ethnic Subnationalist Insurgencies in South Asia: Identities, Interests and Challenges to State Authority*, ed. Jugdep S. Chima (New Delhi: Routledge, 2015).

129   Shapan Adnan, "Migration Land Alienation and Ethnic Conflict. Causes of Poverty in the Chittagong Hill Tracts of Bangladesh," *Journal of Agrarian Change* 8, 1 (2008).

130   Interviews, January 2020.

131   Asian Centre for Human Rights, *Report on the Rohingya Refugee Crisis* (Delhi: ACHR, 2017).

132   See Muthukumara Mani et al., *South Asia's Hotspots: The impact of temperature and precipitation changes on living standards* (Washington DC: World Bank Group, 2018).

133   See, e.g. Aynul Islam, "The Land Tenure Dynamics in the Post-Conflict Chittagong Hill Tracts (CHT), Bangladesh," *Bangladesh Political Science Review* 9, 1 (2013).

134   Draft Bangladesh Common Country Assessment [on file with author].

135   For land grabbing analysis, see Benjamin K. Sovacool, "Bamboo Beating Bandits: Conflict, Inequality, and Vulnerability in the Political Ecology of Climate Change Adaptation in Bangladesh," *World Development* 102 (2018): 183-194.

136   Sarah Dalrymple et al., *Climate Change and Security in Bangladesh: A Case Study* (London: Saferworld, 2009)

137   Start Funds Bangladesh, *Bangladesh Food Insecurity, Chittagong Hills Tracts* (Dhaka: Start Network, 2018), https://reliefweb.int/sites/reliefweb.int/files/resources/1803014%20Start%20Fund%20Bangladesh%20Food%20Insecurity%20Crisis%20Profile%20CHT%20.pdf

138   Daily Sun, "Three UPDF Men Killed in 'Gunfight' with Army," *Daily Sun Bangladesh*, 27 August 2019, https://www.daily-sun.com/printversion/details/418479/2019/08/27/3-UPDF-men-killed-in%E2%80%98gunfight%E2%80%99with-army.

139   See, Afshana Parven and MS Hasan, "Trans-Boundary Water Conflicts Between Bangladesh and India: Water Governance Practice for Conflict Resolution," *International Journal of Agricultural Research, Innovation and Technology*, 8, 1 (2018), 79-84; Pia Malhotra, *Water Issues between Nepal, India & Bangladesh: A Review of Literature* (New Delhi: Institute of Peace and Conflict Studies, 2010).

140   Lisa Friedman, "A Global 'National Security' Issue Lurks at Bangladesh's Border," *The New York Times*, 23 March 2009.

141   Raekha Prasad, "India Builds a 2,500-mile Barrier to Rival the Great Wall of China," *The Times*, 28 December 2005.

142   Ain o Salish Kendra, *Human Rights in Bangladesh 2008* (Dhaka: ASK, 2009); Brad Adams, "India's Shoot-to-Kill Policy on Bangladesh Border," *The Guardian*, 23 January 2011, https://www.theguardian.com/commentisfree/libertycentral/2011/jan/23/india-bangladesh-border-shoot-to-kill-policy.

143   Odikhar, "Human Rights Violations by Indian Border Security Forces Against Bangladeshi Citizens," accessed 22 March 2020, http://odhikar.org/statistics/statistics-on-violations-in-the-border-area/.

144   Sanjeev Tripathi, *Illegal Immigration from Bangladesh to India: Toward a Comprehensive Solution* (New York: Carnegie Press, 2016).

145   Chandan Kumar Sharma, "The Immigration Issue in Assam and Conflicts Around It," *Asian Ethnicity* 13 (2012): 287-309; Biswajyoti Das, "Refugees Flee Ethnic Violence in Assam," *Reuters*, 26 July 2012.

146   Ashley Zeiger, "India's Assam Shows Second-Order, Dangerous Effects of Climate Change in South Asia," *New Security Beat*, 13 August 2013, https://www.newsecuritybeat.org/2013/08/indias-assam-shows-order-dangerous-effects-climate-change-south-asia/

147   Aswini Kumar Nanda, "Immigration from Bangladesh to India Based on Census Data," *Asian and Pacific Migration Journal* 14, 4 (2005).

148   Sujan Saha, "Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh," in *Climate Change, Human Security and Violent Conflict*, ed. Jürgen Scheffrran et al. (New York: Springer, 2012): 595-611.

149   Ibid.

150   Internal Displacement Monitoring Centre, "Bangladesh Country Information," accessed 22 March 2020, https://www.internal-displacement.org/countries/bangladesh

151 Sujan Saha, "Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh," in *Climate Change, Human Security and Violent Conflict*, ed. Jürgen Scheffrran et al. (New York: Springer, 2012): 595-611.

152 Ibid.

153 Karen E. McNamara et al., "Insecure Hope: the Challenges Faced by Urban Slum Dwellers in Bhola Slum, Bangladesh," *Migration and Development* 5, 1(2016): 1-15.

154 Ibid; See also, UN Habitat, *2008: State of the World's Cities 2008/2009 – Harmonious Cities* (Nairobi: UN Habitat, 2008).

155 Naoko Kaida and Tofail Miah, "Rural-urban perspectives on impoverishment risks in development-induced involuntary resettlement in Bangladesh," *Habitat International* 50 (2015): 73-79 [NB: not on climate related migration].

156 Susan Hanson, et al., "A Global Ranking of Port Cities with High Exposure to Climate Extremes," *Climatic Change* 104 (2011): 89-111.

157 Dhanasree Jayaram, *Climate-Fragility Risk Brief: South Asia* (Berlin: Adelph and Climate Security Expert Network, 2019).

158 World Bank, "Dhaka: Improving Living Conditions for the Urban Poor," *World Bank Working Papers* 40424 (Washington DC: World Bank, 2007): 65.

159 Iftekhar Ahmed & Guy Johnson, "Urban Safety and Poverty in Dhaka, Bangladesh: Understanding the Structural and Institutional Linkages," *Australian Planner* 51, 3 (2014): 272-280.

160 Interview, 3 February 2020.

161 Organisation for Economic Cooperation and Development, *States of Fragility 2016* (Paris: OECD, 2016).

162 Khan A. Matin, "Income Inequality in Bangladesh," *Bangladesh Journal of Political Economy* 31, 2 (2015): 173-188.

163 Interview, January 2020; see also, Development Finance International and Oxfam, *The Commitment to Reducing Inequality Index 2018* (Nairobi: Oxfam, 2016), https://s3.amazonaws.com/oxfam-us/www/static/media/files/The_Commitment_to_Reducing_Inequality_Index_2018.pdf

164 Iftekhar Ahmed & Guy Johnson, "Urban Safety and Poverty in Dhaka, Bangladesh: Understanding the Structural and Institutional Linkages," *Australian Planner* 51,3 (2014): 272-280.

165 United Nations and the World Bank, *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict* (Washington, DC: World Bank, 2017).

166 Umma Habiba et al., *Food Security and Risk Reduction in Bangladesh* (New York: Springer, 2015).

167 Onil Banerjee et al., "An Economy-Wide Analysis of Climate Change Impacts on Agriculture and Food Security in Bangladesh," *Climate Change Economics* 6, 1 (2015).

168 Winston H. Yu et al., *Climate Change and Food Security in Bangladesh* (London: Earthscan, 2010).

169 Parvin Sultana and Paul M. Thompson, "Adaptation or Conflict? Response to Climate Change in Water Management," *Environmental Science and Policy* 78 (2017): 149-156.

170 Sarah Dalrymple et al., *Climate Change and Security in Bangladesh: A Case Study* (London: Saferworld, 2009).

171 Sujan Saha, "Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh," in *Climate Change, Human Security and Violent Conflict*, ed. Jürgen Scheffrran et al. (New York: Springer, 2012), 595-611; Mohammed Javed Mia, "Bangladesh: The Effect of Political, Economic & Social Imparity and the Rise of Islamic Militancy," *Conflict Studies Quarterly* 18 (2017).

172 Ellen Barry, "Al Qaeda Branch Claims Responsibility for Bangladeshi Blogger's Killing," *New York Times*, 3 May 2015.

173 Interview, 3 February 2020.

174 See, e.g., Alan B. Krueger and Jitka Malečková, "Education, Poverty and Terrorism: Is There a Causal Connection?," *Journal of Economic Perspectives* 17, 4 (2003): 119-144; Alexander Lee, "Who Becomes a Terrorist?: Poverty, Education, and the Origins of Political Violence," *World Politics* 63, 2 (2011).

175 See, e.g., Shahab Enam Khan, "Bangladesh: The Changing Dynamics of Violent Extremism and the Response of the State," *Small Wars and Insurgencies* 28 (2017).

176 UN News, "Bangladeshi Prime Minister Wins UN Environment Prize for Leadership on Climate Change," *UN News*, 14 September 2015, https://news.un.org/en/story/2015/09/508702#.VfdSTWRViko

177 Ministry of Environment and Forests, *Climate Change Adaptation Strategy and Action Plan 2009* (Dhaka: Government of the People's Republic of Bangladesh, 2019), https://www.iucn.org/downloads/bangladesh_climate_change_strategy_and_action_plan_2009.pdf

178 For background on maladaptation, see, Jon Barnett and Saffron O'Neill, "Maladaptation," *Global Environmental Change* 20, 2 (2010): 211-213; Siri H. Eriksen et al., "Reframing Adaptation: The Political Nature of Climate Change Adaptation," *Global Environmental Change* 35 (2015): 523-533; Marcus Taylor, *The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change and the Conflicts of Development* (London: Routledge Press, 2014).

179 See, Jessica M. Ayers and Saleemul Huq, "The Value of Linking Mitigation and Adaptation: A Case Study of Bangladesh.," *Environmental Management* 43, 5 (2009): 753–764.

180 Jessica Ayers et al., "Mainstreaming climate change adaptation into development in Bangladesh," *Climate and Development* 6, 4 (2014): 293-30.

181 Ibid: 299.

182 Ibid.

183 See, e.g., UN Office for Disaster Risk Reduction, "Bangladesh Goes Beyond Cyclones," UNDRR, 16 December 2019, https://www.undrr.org/news/bangladesh-goes-beyond-cyclones.

184 Interviews, January-February 2020.

185 See Ibrat Sharif et al., "Climate Change Adaptation Policies in Bangladesh: Gap Analysis through a Gender Lens," *BRAC University Journal* 11, 2 (2016): 11-15.

186 Ministry of Environment and Forest, *Bangladesh Climate Change and Gender Action Plan* (Dhaka: Government of the People's Republic of Bangladesh, 2013), https://portals.iucn.org/union/sites/union/files/doc/bangladesh.pdf.

187 See, United Nations Common Country Analysis 2020 [on file with author].

188 Rafiqul Islam, "To Help Climate Migrants, Bangladesh Takes Back Land from the Sea," *Reuters*, 9 September 2015.

189 Ibid.

190 Benjamin K. Sovacool, "Bamboo Beating Bandits: Conflict, Inequality, and Vulnerability in the Political Ecology of Climate Change Adaptation in Bangladesh," *World Development* 102 (2018): 183-194.

191 For a description of land tenure conflicts, see Aynul Islam, "The Land Tenure Dynamics in the Post-Conflict Chittagong Hill Tracts (CHT), Bangladesh," *Bangladesh Political Science Review* 9, 1 (2013); Shelley Feldman and Charles Geisler, "Land Expropriation and Displacement in Bangladesh," *The Journal of Peasant Studies* 39 (2012).

192 See Mahbubur Rahmen, "Housing Attainability: A Concept Towards Solving the Urban Housing Crisis in Bangladesh," in *Planning for a Better Urban Living Environment in Asia*, ed. Anthony Gar-On Yeh and Mee Kam Ng (Beijing: Routledge, 2017).

193 Interview with UN official, 3 February 2020.

194 See, e.g. Tanjil Sowgat et al., "Pro-Poorness of Planning Policies in Bangladesh: The Case of Khulna City," *International Planning Studies* 22, 2 (2017): 145-160.

195 Karen E. McNamara et al., "Insecure Hope: The Challenges Faced by Urban Slum Dwellers in Bhola Slum, Bangladesh," *Migration and Development* 5, 1 (2016): 1-15.

196 Ronju Ahammad, "Constraints of Pro-Poor Climate Change Adaptation in Chittagong City," *Environment and Urbanization* 23, 2 (2011): 503-515.

197 AZM Anas, "Bangladesh Fears Rohingya-like Crisis Over India Citizenship Law," *Nikkei Asian Review*, 16 January 2020.

198 Interview, 3 February 2020.

199 Common Country Analysis [on file with author].

200 UNDP and UNCDF, with support from the EU and SIDA.

201 United Nations Office for the Coordination of Humanitarian Affairs, *Joint Response Plan for Rohingya Humanitarian Crisis* (Geneva: OCHA, 2019: 23.

202 Inter Sector Coordination Group, *Summary Report, Natural Hazards Risk Analysis Task Force, Cox's Bazar* (New York: UNDP, 2019): 1, https://reliefweb.int/sites/reliefweb.int/files/resources/1906_Summary_report_NatHaz_activity_0.pdf

203 UNFPA and UN Women.

204 United Nations Office for the Coordination of Humanitarian Affairs, *Joint Response Plan for Rohingya Humanitarian Crisis* (Geneva: OCHA, 2019): 23.

205 United Nations Office for the Coordination of Humanitarian Affairs, *Joint Response Plan for Rohingya Humanitarian Crisis 2019 Funding Update* (Geneva: OCHA, 2019), https://reliefweb.int/report/bangladesh/rohingya-humanitarian-crisis-joint-response-plan-2019-funding-update-20190831

206 UN News, "Monsoon Destroys Rohingya Shelters, Sparking Record UN Emergency Food Agency Response in Bangladesh," *UN News*, 13 September 2019, https://news.un.org/en/story/2019/09/1046252

207 Subas P. Dhakal and Muhammad N. Mahmood, "International Aid and Cyclone Shelters in Bangladesh: Adaptation or Maladaptation?," *Contemporary South Asia*, 22,3 (2014): 290-304.

208 Josh Busby, "It's Time we Think Beyond 'Threat Multiplier' to Address Climate and Security," *New Security Beat*, 21 January 2020, https://www.newsecuritybeat.org/2020/01/its-time-threat-multiplier-address-climate-security/

209 Subas P. Dhakal and Muhammad N. Mahmood, "International Aid and Cyclone Shelters in Bangladesh: Adaptation or Maladaptation?," *Contemporary South Asia*, 22, 3 (2014): 290-304.

210 For a broader proposal on this issue, see, A.K. Magnan et al., "Addressing the Risk of Maladaptation to Climate Change," *Climate Change* 7 (2016): 464-665.

211 Ibid.

212 J.B. Ruhl, "The Political Economy of Climate Change Winners," *Minnesota Law Review* (2012); Hans-Martin Füssel, "How Inequitable is the Global Distribution of Responsibility, Capability, and Vulnerability to Climate Change: A Comprehensive Indicator-based Assessment," *Global Environmental Change* 20, 4 (2010): 597-611.

213 United Nations and the World Bank, *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict* (Washington, DC: World Bank, 2018).

214 Tanjil Sowgat et al., "Pro-Poorness of Planning Policies in Bangladesh: The Case of Khulna City," *International Planning Studies* 22, 2 (2017): 145-160.

215 See, H.M. Tuihedur Rahman et al., "Climate Change Research in Bangladesh: Research Gaps and Implications for Adaption Related Decision-making," *Regional Environmental Change* 18, 5 (2018): 1535-1553 [noting the focus of scholarship on economic issues].

216 H.M. Tuihedur and Gordon M. Hickey, "What Does Autonomous Adaptation to Climate Change Have to Teach Public Policy and Planning About Avoiding the Risks of Maladaptation in Bangladesh?," *Frontiers of Environmental Science* 22 (2019); Sonja Ayeb-Karlsson et al., "A People-Centred Perspective on Climate Change, Environmental Stress, and Livelihood Resilience in Bangladesh," *Sustainable Science* 11 (2016): 679-694.

217 See, e.g., Issa Ibrahim Berchin et al., "Climate Change and Forced Migrations: An Effort Towards Recognizing Climate Refugees," *Geoforum* 84 (2017): 147-150.

218   Olumide Oyekunle, *The Largest Economies in Africa by GDP, 2019* (Ebene: The African Exponent, 2019), https://www.africanexponent.com/post/9786-top-six-countries-with-the-biggest-gdp-in-africa; Aderemi Ojekunle, "These are the 7 Most Powerful African Countries on Earth Right Now," *Business Insider*, 3 June 2019, https://www.pulse.ng/bi/politics/the-7-most-powerful-african-countries/fjz3kg8; US News & World Report, "Power Ranking," accessed 22 March 2020, https://www.usnews.com/news/best-countries/power-rankings.

219   The Armed Conflict Location & Event Data Project, "Nigeria Dashboard," accessed 22 March 2020, https://www.acleddata.com/dashboard/#566.

220   Adam Day and Jessica Caus, *Conflict Prevention in the Sahel. Emerging Practice Across the UN* (New York: United Nations University, 2019), https://cpr.unu.edu/conflict-prevention-in-the-sahel-emerging-practice-across-the-un.html; Chitra Nagarajan et al., *Climate-Fragility Profile: Lake Chad Basin* (Berlin: Adelphi, 2018).

221   USAID, *Nigeria. Climate Vulnerability Profile* (Washington DC: USAID, 2012), https://www.climatelinks.org/sites/default/files/asset/document/nigeria_climate_vulnerability_profile_jan2013.pdf.

222   United Nations and the World Bank, *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict* (Washington DC: World Bank, 2018).

223   Counterextremism Project, "Boko Haram," accessed 22 March 2020, https://www.counterextremism.com/threat/boko-haram.

224   Council on Foreign Relations, "Global Conflict Tracker," accessed 22 March 2020, https://www.cfr.org/interactive/global-conflict-tracker/conflict/boko-haram-nigeria; UNHRC, "Nigeria Situation," accessed 22 March 2020. https://data2.unhcr.org/en/situations/nigeriasituation#_ga=2.155809531.1973709748.1571844796-1590759838.1571844796.

225   Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017), https://undocs.org/DP/DCP/NGA/3.

226   The Armed Conflict Location & Event Data Project, "Nigeria Dashboard," accessed 22 March 2020, https://www.acleddata.com/dashboard/#566; Ruth Maclean and Eric Hilaire, "What Next for the Millions Uprooted by Boko Haram?," *The Guardian*, 5 April 2018, https://www.theguardian.com/global-development/2018/apr/05/millions-uprooted-boko-haram-lake-chad-basin-nigeria-cameroon-niger-photo-essay.

227   Ruth Maclean and Eric Schmitt, "ISIS Affiliate in Nigeria Releases a Video Showing 11 Executions," *The New York Times*, 27 December 2019, https://www.nytimes.com/2019/12/27/world/africa/ISIS-executions-Nigeria.html.

228   BBC, "Islamic State in Nigeria Beheads Christian Hostages," *BBC News*, 27 December 2018, https://www.bbc.com/news/world-africa-50924266.

229   United Nations, *United Nations Sustainable Development Partnership Framework (UNSDPF). Nigeria 2018-2022* (Abuja: United Nations, 2017).

230   International Crisis Group, "Stopping Nigeria's Spiraling Farmer-Herder Violence," *Africa Report* 262 (2018).

231   Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019), https://climate-security-expert-network.org/sites/climate-security-expert-network.com/files/documents/csen_climate_fragility_risk_brief_-_north_africa_sahel_.pdf.

232   Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related Risks on Nigeria's National Security* (Abuja: Goro Initiative, 2019), https://goroinitiative.org/the-implications-of-climate-change-related-risks-on-nigerias-national-security/; Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017), https://undocs.org/DP/DCP/NGA/3.

233   UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, 2018), https://unowas.unmissions.org/sites/default/files/rapport_pastoralisme_eng-april_2019_-_online.pdf; Madeline Flamik, *How Climate Change is Affecting Armed Groups in Nigeria* (Washington DC: American Security Project, 2018), https://www.americansecurityproject.org/fulani-bachama-nigerian-conflict/.

234   International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

235   Adam Day and Jessica Caus, *Conflict Prevention in the Sahel. Emerging Practice Across the UN* (New York: United Nations University, 2019), https://cpr.unu.edu/conflict-prevention-in-the-sahel-emerging-practice-across-the-un.html; International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018); Chidi Oguamanam, "Nigeria Faces New Security Threat Fuelled by Climate Change and Ethnicity," *The Conversation*, 12 May 2016, http://theconversation.com/nigeria-faces-new-security-threat-fuelled-by-climate-change-and-ethnicity-58807.

236   International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018); Ashley Moran et al., *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019).

237   International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

238   Abdullahi Murtala and Muhammad Ibrahim Abba, "The Implications of Climate Change-related Risks on Nigeria's National Security" (Abuja: Goro Initiative, 2019); Ashley Moran et al., *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019).

239 UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, Human Rights Watch, *Nigeria. Events of 2018* (New York: Human Rights Watch, 2018), https://www.hrw.org/world-report/2019/country-chapters/nigeria#63bd4f; Amnesty International, "Nigeria: Government Failures Fuel Escalating Conflict Between Farmers and Herders as Death Toll Nears 4,000" (London: Amnesty International, 2018) Amnesty International, 17 December 2018, https://www.amnesty.org/en/latest/news/2018/12/nigeria-government-failures-fuel-escalating-conflict-between-farmers-and-herders-as-death-toll-nears-4000/; Alicia Prager and Simpa Samson, "The Fight Against Nigeria's Northeast Terrorism is also a Battle against Climate Change," *Quartz*, 18 October, 2019, https://qz.com/africa/1730868/fighting-boko-haram-and-climate-change-in-nigeria/.

240 Internal document [on file with authors]; International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

241 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

242 UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, 2018).

243 USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019); Ashley Moran et al., *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019).

244 Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017); The Armed Conflict Location & Event Data Project, "Nigeria Dashboard," accessed 22 March 2020, https://www.acleddata.com/dashboard/#566.

245 Nigeria ranks 158th out of 189 countries on the Human Development Index 2019, see, United Nations Development Programme, "Human Development Index," accessed 22 March 2020, http://hdr.undp.org/en/data.

246 United Nations Population Fund, "UNFPA Nigeria," accessed 2 March 2020, https://www.unfpa.org/data/NG; USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

247 Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017); USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

248 Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017).

249 Interview, 29 January 2020.

250 World Bank, "The World Bank in Nigeria," accessed 22 March 2020, https://www.worldbank.org/en/country/nigeria/overview; Basil Anthony Abia, *Economic Implications of the Recent Border Closure* (Abuja: Centre for the Study of the Economies of Africa, 2020), http://cseaafrica.org/economic-implications-of-the-recent-border-closure/.

251 World Bank, "The World Bank in Nigeria," accessed 22 March 2020. https://www.worldbank.org/en/country/nigeria/overview; Christopher Giles, "Nigeria Election 2019: Mapping a Nation in Nine Charts," *BBC News*, 11 February 2019, https://www.bbc.com/news/world-africa-47149528; Executive Board of the United Nations Development Programme, the United Nations Population Fund and the Unit-ed Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017).

252 Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017).

253 Joseph C. Ebegbulem et al., "Oil Exploration and Poverty in the Niger Delta Region of Nigeria: A Critical Analysis", *International Journal of Business and Social Science* 4, 3, (2013)

254 UNHRC, "Nigeria Situation," accessed 22 March 2020. https://data2.unhcr.org/en/situations/nigeriasituation#_ga=2.155809531.1973709748.1571844796-1590759838.1571844796; UNHCR, "Nigeria," accessed 22 March 2020, https://data2.unhcr.org/en/country/nga; Catherine Wachiaya, "Displaced Cameroonians struggle in Nigeria," UNHRC, 15 May 2019; *UN News*, "Fleeing Violence, Cameroonian Refugee Arrivals in Nigeria Pass 30,000, Reports UN Refugee Agency," *UN News/Africa Renewal*, 19 November 2019, https://news.un.org/en/story/2018/11/1025351

255 Victor Ede, "Addressing Conflict-induced Internal Displacement in Nigeria: The Religious Option," *Journal of Advanced Research in Humanities and Social Science* 6, 1 (2019); Nasa'i Muhammad Gwadabe et al., "Forced Displacement and the Plight of Internally Displaced Persons in Northeast Nigeria," *Humanities and Social Science Research* 1, 1 (2018); Osagioduwa Eweka and Toluwanimi Oluwakorede Olusegun, "Management of Internally Displaced Persons in Africa: Comparing Nigeria and Cameroon," *African Research Review* 10,1 (2016).

256 See, e.g., Ani Alobo and Synda Obaji, "Internal Displacement in Nigeria and the Case for Human Rights Protection of Displaced Persons," *Journal of Policy and Globalization* 26 (2016): 26-41.

257 David Sverdlov, "Rape in War: Prosecuting the Islamic State of Iraq and the Levant and Boko Haram for Sexual Violence Against Women", *Cornell International Law Journal* 333 (2017); Mohammed Umar Bashir et al., "Boko Haram Insurgency and Violence Against Women in North Eastern Nigeria," *International Journal of Modern Trends in Social Sciences* 2, 10 (2019).

258 Oladosu Ojengbede et al., "Sexual and Gender-based Violence in Camps for Internally Displaced People and Host Communities in Northeast Nigeria: A Mixed Methods Study," *The Lancet* 7, 1 (2019).

259 Abdullahi Murtala and Fakhrriyyah Hashim: *Can the Great Green Wall Combat Desertification, Deteriorating Rural Economy and Improve Security In Northern Nigeria?* (Abuja: Goro Initiative, 2019), https://goroinitiative.org/can-the-great-green-wall-combat-desertification-deteriorating-rural-economy-and-improve-security-in-northern-nigeria-by-murtala-abdullahi-and-fakhrriyyah-hashim/.

260   Transparency International, *Corruption Perceptions Index 2018* (Berlin: Transparency International, 2018), https://www.transparency.org/cpi2018; Chitra Nagarajan et al., *Climate-Fragility Profile: Lake Chad Basin* (Berlin: Adelphi 2018).

261   BBC, "Five Things About Nigeria: The Superpower with No Power," *BBC News*, 14 February 2020, https://www.bbc.com/news/world-africa-47217557.

262   Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011); Sustainable Competitiveness Observatory, "Physical Vulnerability to Climate Change Index. Nigeria," accessed 22 March 2020, https://competitivite.ferdi.fr/en/countries/nigeria-nga?indicators=PHY_VUL_01.

263   Ashley Moran et al, *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019).

264   Ibid.

265   World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Projections," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-projections.

266   World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Projections," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-projections; World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Historical," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-historical; USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

267   World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Historical," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-historical.

268   World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Projections," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-projections; USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019); Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

269   Ashley Moran et al, "Fragility and Climate Risks. Nigeria" (Washington DC: USAID, 2019).

270   World Bank Climate Change Knowledge Portal, "Nigeria Climate Data, Historical," accessed 22 March 2020. https://climateknowledgeportal.worldbank.org/country/nigeria/climate-data-historical; USAID, "Climate Risk Profile. Nigeria" (Washington DC: USAID, 2019).

271   Aaron Sayne, "Climate Change Adaptation and Conflict in Nigeria" (Washington DC: United States Institute for Peace, 2011).

272   Aaron Sayne, "Climate Change Adaptation and Conflict in Nigeria" (Washington DC: United States Institute for Peace, 2011); Nigerian Federal Ministry of Environment, *National Action Programme to Combat Desertification* (Abuja: Government of the Republic of Nigeria, 2001).

273   Aaron Sayne, "Climate Change Adaptation and Conflict in Nigeria" (Washington DC: United States Institute for Peace, 2011); Ciara Nugent, "Land Conflict Has Long Been a Problem in Nigeria. Here's How Climate Change Is Making It Worse," *TIME*, 28 June 2018, https://time.com/5324712/climate-change-nigeria/.

274   Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019); USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

275   USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

276   Chitra Nagarajan et al., *Climate-Fragility Profile: Lake Chad Basin* (Berlin: Adelphi 2018); Lake Chad Basin Commission and African Union Commission, *Regional Strategy for the Stabilization, Recovery & Resilience of the Boko Haram-affected Areas of the Lake Chad Basin Region* (N'Djamena: Lake Chad Basin Commission, 2019).

277   Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

278   Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

279   USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

280   Ibid.

281   Intergovernmental Panel on Climate Change, "Climate Change 2014: Synthesis Report," *Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Geneva: IPCC, 2014); Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

282   Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011); Ashley Moran et al., *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019); Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related Rrisks on Nigeria's National Security* (Abuja: Goro Initiative, 2019).

283   Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related risks on Nigeria's National Security* (Abuja: Goro Initiative, 2019).

284   Peter Odjugo, "An Analysis of Rainfall Pattern in Nigeria," *Global Journal of Environmental Science* 4, 2 (2005).

285   USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

286   Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011); Ashley Moran et al., *Fragility and Climate Risks. Nigeria* (Washington DC: USAID, 2019).

287   USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

288   World Bank Climate Change Knowledge Portal, "Nigeria Vulnerability," accessed 22 March 2020, https://climateknowledgeportal.worldbank.org/country/nigeria/vulnerability.

289   USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

290 See, e.g., Craig A. Anderson and Matt DeLisi, "Implications of Global Climate Change for Violence in Developed and Developing Countries", in: *The Sydney Symposium of Social Psychology: The Psychology of Social Conflict and Aggression*, Vol 13, ed. J.P. Forgas et al. (New York: Psychology Press, 2011).

291 Chitra Nagarajan et al., *Climate-Fragility Profile: Lake Chad Basin* (Berlin: Adelphi 2018).

292 Joshua Busby, *The Field of Climate and Security: A Scan of the Literature* (Austin: Social Science Research Council, 2019).

293 Mabel Ukamaka Dimelu et al., "Resource use Conflict in Agrarian Communities, Management and Challenges: A Case of Farmer-Herdsmen Conflict in Kogi State, Nigeria," *Journal of Rural Studies* 46 (2016).

294 Thomas Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security* 19, 1 (1991).

295 Madeline Flamik, *How Climate Change is Affecting Armed Groups in Nigeria* (Washington DC: American Security Project, 2018), https://www.americansecurityproject.org/fulani-bachama-nigerian-conflict/; Intergovernmental Panel on Climate Change, *Special Report on Climate Change and Land* (Geneva: IPCC, 2019).

296 Temitope Edward Akinyemi and Azeez Olaniyan, "Nigeria: Climate War. Migratory Adaptation and Farmer-Herder Conflicts," *Conflict Studies Quarterly* 21 (2017); Roger Blench, "The Expansion and Adaptation of Fulbe Pastoralism to Subhumid and Humid Conditions in Nigeria," *Cahiers d'Études Africaines* (1994).

297 Temitope Edward Akinyemi and Azeez Olaniyan, "Nigeria: Climate War. Migratory Adaptation and Farmer-Herder Conflicts," *Conflict Studies Quarterly* 21 (2017); Madeline Flamik, *How Climate Change is Affecting Armed Groups in Nigeria* (Washington DC: American Security Project, 2018).

298 Temitope Edward Akinyemi and Azeez Olaniyan, "Nigeria: Climate War. Migratory Adaptation and Farmer-Herder Conflicts," *Conflict Studies Quarterly* 21 (2017); Ismaila Alfa Adamu and Abdullahi Umar, "The Role of Climatic and Environmental Change in Farmers-Pastoralists' Conflicts in Drylands of Nigeria and Niger Republic," *Journal of Global Resources* 5 (2017); Mabel Ukamaka Dimelu et al., "Resource Use Conflict in Agrarian Communities, Management and Challenges: A case of Farmer-Herdsmen Conflict in Kogi State, Nigeria," *Journal of Rural Studies* 46 (2016).

299 Temitope Edward Akinyemi and Azeez Olaniyan, "Nigeria: Climate War. Migratory Adaptation and Farmer-Herder Conflicts," *Conflict Studies Quarterly* 21 (2017); Olawale Emmanuel Olayide Olayide et al, "Differential Impacts of Rainfall and Irrigation on Agricultural Production in Nigeria: Any Lessons for Climate-smart Agriculture?," *Agricultural Water Management* 178 (2016).

300 Mabel Ukamaka Dimelu et al., "Resource Use Conflict in Agrarian Communities, Management and Challenges: A case of Farmer-Herdsmen Conflict in Kogi State, Nigeria," *Journal of Rural Studies* 46 (2016); International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

301 UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, 2018).

302 Kelsey Jones-Casey and Anna Knox, "Farmer-Herder Conflicts in Mali" (Washington DC: Focus on Land in Africa, 2011), https://gatesopenresearch.org/documents/3-475.

303 John Campbell, "Farmer Herder Clashes in Chad Follow Familiar Pattern," Council on Foreign Relations, 21 May 2019, https://www.cfr.org/blog/farmer-herder-clashes-chad-follow-familiar-pattern.

304 Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011); Human Rights Watch, *They Do Not Own This Place.' Government Discrimination Against 'Non-Indigenes' in Nigeria* (New York: Human Rights Watch, 2006), https://www.hrw.org/sites/default/files/reports/nigeria0406webwcover.pdf.

305 Interviews, September 2019; Surulola Eke, "'Nomad Savage' and Herder–Farmer Conflicts in Nigeria: The (Un)Making of an Ancient Myth," *Third World Quarterly* (2019).

306 UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, 2018).

307 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

308 UK Department for International Development, *Impact of Climate Change on Nigeria's Economy* (London: DFID, 2009); Nebedum Ekene Ebele and Nnaemeka Vincent Emodi, "Climate Change and Its Impact in Nigerian Economy," *Journal of Scientific Research and Reports* 10, 6 (2016).

309 Nebedum Ekene Ebele and Nnaemeka Vincent Emodi, "Climate Change and Its Impact in Nigerian Economy," *Journal of Scientific Research and Reports* 10, 6 (2016).

310 J.C. Nkomo et al., "The Impacts of Climate Change in Africa," *The Stern Review on the Economics of Climate Change* (2006).

311 Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related Risks on Nigeria's National Security* (Abuja: Goro Initiative, 2019).

312 Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

313 Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related Risks on Nigeria's National Security* (Abuja: Goro Initiative, 2019); Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

314 Nebedum Ekene Ebele and Nnaemeka Vincent Emodi, "Climate Change and Its Impact in Nigerian Economy," *Journal of Scientific Research and Reports* 10, 6 (2016).

315 USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

316 Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

317 Ibid.

318 Chitra Nagarajan et al., *Climate-Fragility Profile: Lake Chad Basin* (Berlin: Adelphi 2018); Janani Vivekananda and Camilla Born, *Lake Chad Region. Climate-related security risk assessment* (Berlin: Expert Working Group on Climate-related Security Risks, 2018); Julia McQuaid et al., *The Role of Water Stress in Instability and Conflict* (Arlington: CNA, 2017).

319 Janani Vivekananda et al., *Shoring Up Stability. Addressing Climate and Fragility Risks in the Lake Chad Region* (Berlin: Adelphi, 2019).

320 Kate Meagher, *Beyond Terror: Addressing the Boko Haram Challenge in Nigeria* (Oslo: Norwegian Peacebuilding Resource Centre, 2014), https://www.files.ethz.ch/isn/185409/5614f83843057164a8ba03658dccb344.pdf; Kate Meagher and Ibrahim Haruna Hassan, "Informalization & its Discontents: The Informal Economy & Islamic Radicalization in Northern Nigeria," in *Overcoming Boko Haram. Faith, Society & Islamic Radicalization in Northern Nigeria*, ed. Abdul Raufu Mustapha and Kate Meagher (Woodbridge: Boydell & Brewer, 2020); Kate Meagher, "The Job Crisis Behind Nigeria's Unrest," *Current History* 112, 754, (2013). Imasuen Emmanuelar, "Insurgency and Humanitarian Crises in Northern Nigeria: The Case of Boko Haram," *African Journal of Political Science and International Relations* 9, 7 (2015).

321 Adesoji Adelaja and Justin George, "Effects of Conflict on Agriculture: Evidence from the Boko Haram Insurgency," *World Devleopment* 117 (2019).

322 See, e.g., Freedom C. Onuoha, *Why Do Youth Join Boko Haram?* (Washington DC: United States Institute of Peace, 2014), https://www.files.ethz.ch/isn/180882/SR348-Why_do_Youth_Join_Boko_Haram.pdf; Daniel A. Tonwe and Surulola J. Eke, "State Fragility and Violent Uprisings in Nigeria. The Case of Boko Haram," *African Security Review* 22 (2013).

323 Suranjan Weeraratne, "Theorizing the Expansion of the Boko Haram Insurgency in Nigeria," *Terrorism and Political Violence* 29 (2017).

324 Janani Vivekananda, *Lake Chad Risk Assessment: The Role of Climate Change in the Current Crisis* (Berlin: Adelphi, 2020).

325 Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

326 See, e.g., International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

327 See, e.g., Broska and Fröhlich, who argue that the links between climate change, migration, and conflict are tenuous. Michael Brzoska and Christiane Fröhlich, "Climate Change, Migration and Violent Conflict: Vulnerabilities, Pathways and Adaptation Strategies," *Migration and Development* 5, 2 (2015).

328 Sylviane Guillaumont Jeanneney et al., *Linking security and development – A Plea for the Sahel* (Paris: Ferdi, 2016), https://ferdi.fr/en/publications/linking-security-and-development-a-plea-for-the-sahel; Dennis Hamro-Drotz, "Livelihood Security: Climate Change, Migration and Conflict in the Sahel," in *Conflict-Sensitive Adaptation to Climate Change in Africa*, ed. Urmilla Bob and Salomé Bronkhorst (Berlin: BWV Berliner Wissenschafts-Verlag, 2014); Alastair Leithead: "The City that Won't Stop Growing. How can Lagos Cope with its Spiralling Population?," *BBC News*, 21 August 2017, https://www.bbc.co.uk/news/resources/idt-sh/lagos.

329 Christin Roby, "Nexus of Climate and Conflict Exacerbates Sahel Food Security Crisis," *Devex*, 31 August 2018, https://www.devex.com/news/nexus-of-climate-and-conflict-exacerbates-sahel-food-security-crisis-93160.

330 Interview, 25 February 2020; Olivia Serdeczny et al., "Climate Change Impacts in Sub-Saharan Africa: From Physical Changes to their Social Repercussions," in *Regional Environmental Change*, ed. Olivia Serdeczny et al. (New York: Springer-Verlag, 2016); Oyeleye Oyewale Idowu, "Challenges of Urbanization and Urban Growth in Nigeria," *American Journal of Sustainable Cities and Society* 1, 2 (2013).

331 Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

332 Organisation for Economic Co-operation and Development, *States of Fragility 2016* (Paris: OECD, 2016); Ronak B. Patel and Frederick M. Burkle, "Rapid Urbanization and the Growing Threat of Violence and Conflict: A 21st Century Crisis," *Prehospital and Disaster Medicine* 27, 2 (2012).

333 Chibuike Emele et al., "The Nature of Land Grabbing in the Peripheral Areas of Lagos State," in *Land Policy Governance and Sustainable Development in Nigeria*, ed. M.B. Nuhu and C.S. Kuma (Minna: Centre for Human Settlement and Urban Development, 2019).

334 USAID, *Climate Risk Profile. Nigeria* (Washington DC: USAID, 2019).

335 Aaron Sayne, *Climate Change Adaptation and Conflict in Nigeria* (Washington DC: United States Institute for Peace, 2011).

336 Abdullahi Murtala and Muhammad Ibrahim Abba, *The Implications of Climate Change-related Risks on Nigeria's National Security* (Abuja: Goro Initiative, 2019).

337 Nigeria ranks 144th out of 180 countries on the Corruption Perceptions Index 2018. Transparency International, *Corruption Perceptions Index 2018* (Berlin: Transparency International, 2018), https://www.transparency.org/cpi2018; Olalekan Charles Okunlola, "Political Regime Types and Economic Development in Nigeria: Significance of Conflict and Corruption," *Journal of Interdisciplinary Economics* 31, 2, (2019).

338 Human Rights Watch, *Nigeria. Events of 2018* (New York: Human Rights Watch, 2018); International Crisis Group, "Facing the Challenge of the Islamic State in West Africa Province," *Africa Report* 273 (2019).

339 Interview, 12 February 2020; World Bank, "The World Bank in Nigeria," accessed 22 March 2020, https://www.worldbank.org/en/country/nigeria/overview

340 Interview, 12 February 2020: Jonathan Nda-Isaiah, "Buhari Unfolds Plans to Reverse Effects of Climate Change in Nigeria," *Premium Times.* 25 September 2019; Nigerian Department of Climate Change, "Nationally Determined Contribution (NDC) Implementation," accessed 22 March 2020, http://climatechange.gov.ng/nationally-determined-contribution-ndc-implementation/; Moyamed Yahya, "Nigeria Must Lead on Climate Change," UNDP, 4 October 2019, https://www.undp.org/content/undp/en/home/blog/2019/nigeria-must-lead-on-climate-change.html.

341 Interview, 12 February 2020; Nigerian Department of Climate Change, "Brief on Green Bonds," accessed 22 March 2020. http://climatechange.gov.ng/brief-green-bonds/.

342 Muhammadu Buhari, "Trees for Peace," *Scientific American*, 14 November 2019, https://blogs.scientificamerican.com/observations/trees-for-peace/; Jonathan Nda-Isaiah, "Buhari Unfolds Plans to Reverse Effects of Climate Change in Nigeria," *Premium Times.* 25 September 2019; Nigerian Department of Climate Change, "Brief on Green Bonds," accessed 22 March 2020, http://climatechange.gov.ng/brief-green-bonds/.

343 The Great Green Wall, "Growing a World Wonder," accessed 22 March 2020, https://www.greatgreenwall.org/about-great-green-wall; Muhammadu Buhari, "Trees for Peace," *Scientific American*, 14 November 2019, https://blogs.scientificamerican.com/observations/trees-for-peace/.

344 The Great Green Wall, "Results," accessed 22 March 2020, https://www.greatgreenwall.org/results; Abdullahi Murtala and Fakhrriyyah Hashim, *Can the Great Green Wall Combat Desertification, Deteriorating Rural Economy and Improve Security In Northern Nigeria?* (Abuja: Goro Initiative, 2019).

345 Muhammadu Buhari, "Trees for Peace," *Scientific American*, 14 November 2019, https://blogs.scientificamerican.com/observations/trees-for-peace/.

346 Huma Haider, *Climate Change in Nigeria: Impacts and Responses* (London: DFID, 2019), https://assets.publishing.service.gov.uk/media/5dcd7a1aed915d0719bf4542/675_Climate_Change_in_Nigeria.pdf.

347 Interview, 22 January 2020; Abdullahi Murtala and Fakhrriyyah Hashim, *Can the Great Green Wall Combat Desertification, Deteriorating Rural Economy and Improve Security in Northern Nigeria?* (Abuja: Goro Initiative, 2019).

348 Interviews, 22 January and 25 February 2020; Abdullahi Murtala and Fakhrriyyah Hashim, *Can the Great Green Wall Combat Desertification, Deteriorating Rural Economy and Improve Security in Northern Nigeria?* (Abuja: Goro Initiative, 2019).

349 Interview, 25 February 2020.

350 Interview, 12 February 2020; Abdullahi Murtala and Fakhrriyyah Hashim, *Can the Great Green Wall Combat Desertification, Deteriorating Rural Economy and Improve Security in Northern Nigeria?* (Abuja: Goro Initiative, 2019); World Bank, "The World Bank in Nigeria," accessed 22 March 2020, https://www.worldbank.org/en/country/nigeria/overview.

351 Fred Pearce, *How Big Water Projects Helped Trigger Africa's Migrant Crisis* (New Haven: Yale School of Forestry & Environmental Studies, 2017).

352 Ibid.

353 Ibid.

354 Ibid.

355 Ministry of Budget and National Planning, *Economic Recovery and Growth Plan 2017-2020* (Abuja: Government of the Republic of Nigeria, 2017), https://yourbudgit.com/wp-content/uploads/2017/03/Economic-Recovery-Growth-Plan-2017-2020.pdf.

356 Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services, *Country programme document for Nigeria (2018-2022)* (New York: United Nations, 2017); United Nations, *United Nations Sustainable Development Partnership Framework (UNSDPF). Nigeria 2018-2022* (Abuja: United Nations, 2017); Jonathan Nda-Isaiah, "Buhari Unfolds Plans to Reverse Effects of Climate Change in Nigeria," *Premium Times*, 25 September 2019, https://www.premiumtimesng.com/news/top-news/353990-buhari-unfolds-plans-to-reverse-effects-of-climate-change-in-nigeria.html.

357 Interview, 12 February 2020.

358 Interview, 22 January 2020; Advisory Committee on Agricultural Resilience in Nigeria, *National Agricultural Resilience Framework* (Abuja: Nigerian Federal Ministry of Agriculture and Rural Development, 2015).

359 Interview, 29 January 2020.

360 Interviews, 22 January and 12 February 2020.

361 Interviews, 22 January and 12 February 2020.

362 World Bank, "The World Bank in Nigeria," accessed 22 March 2020, https://www.worldbank.org/en/country/nigeria/overview; Basil Anthony Abia, "Economic Implications of the Recent Border Closure" (Abuja: Centre for the Study of the Economies of Africa, 2020), http://cseaafrica.org/economic-implications-of-the-recent-border-closure/.

363 Interview, 25 February 2020.

364 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

365 Interview, 22 January 2020; Madeline Flamik, *How Climate Change is Affecting Armed Groups in Nigeria* (Washington DC: American Security Project, 2018), https://www.americansecurityproject.org/fulani-bachama-nigerian-conflict/.

366 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (Brussels: International Crisis Group, 2018); Lere Amusan et al., "Climate Change, Pastoral Migration, Resource Governance and Security: The Grazing Bill Solution to Farmer-Herder Conflict in Nigeria," *Environmental Economics* 8, 3 (2017); Mayowa Fasona et al., "Some Dimensions of Farmers'-Pastoralists' Conflicts in the Nigerian Savanna," *Journal of Global Initiatives: Policy, Pedagogy, Perspective* 10, 2 (2017).

367 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018) ["Most people in Benue reject any connection between the new state law, which bars herders from letting their cattle graze where they please, and the escalation of violence. They argue, with some justification, that killings preceded the law and take place in states far from Benue where there is no such prohibition. But introduction of the law further strained relations between farmers and herders."]

368 International Crisis Group, "Stopping Nigeria's Spiralling Farmer-Herder Violence," *Africa Report* 262 (2018).

369 Ibid.

370 Interview, 28 January 2020.

371 See, e.g., Lucas Lindfors, *All About Scarce Resources? Untangling the Dynamics of Farmer-Herder Violence in Nigeria* (Lund: Lund University, 2019).

372 See, Janani Vivekananda et al., *Shoring Up Stability. Addressing Climate and Fragility Risks in the Lake Chad Region* (Berlin: Adelphi, 2019).

373 Presidential Committee on the North East Initiative, *Rebuilding the North East. The Buhari Plan* (Abuja: Government of the Republic of Nigeria, 2016), https://www.refworld.org/cgi-bin/texis/vtx/rwmain/opendocpdf.pdf?reldoc=y&docid=5b42edff4.

374 United Nations Joint Steering Committee, *Nigeria Joint Steering Committee Progress Review* (New York: United Nations, 2019), https://www.un.org/jsc/sites/www.un.org.jsc/files/general/jsc_progress_review_nigeria_0.pdf.

375 Lake Chad Basin Commission and African Union Commission, *Regional Strategy for the Stabilization, Recovery & Resilience of the Boko Haram-affected Areas of the Lake Chad Basin Region* (N'Djamena: Lake Chad Basin Commission, 2019).

376 Interview, 12 February 2020.

377 United Nations Joint Steering Committee, *Nigeria Joint Steering Committee Progress Review* (New York: United Nations, 2019), https://www.un.org/jsc/sites/www.un.org.jsc/files/general/jsc_progress_review_nigeria_0.pdf.

378 United Nations Security Council, "Adopted by the Security Council at its 7911th Meeting," United Nations, 31 March 2017, S/RES/2349.

379 UNOWAS, *Pastoralism and Security in West Africa and the Sahel. Towards Peaceful Coexistence* (Dakar: UNOWAS, 2018), https://unowas.unmissions.org/sites/default/files/rapport_pastoralisme_eng-april_2019_-_online.pdf.

380 Interview, 19 February 2020.

381 Interviews, 12 and 19 February 2020.

382 Interview, 19 February 2020.

383 Interview, 29 January 2020.

384 United Nations Development Programme, "UNDP Launches Regional Stabilization Facility for Lake Chad," UNDP, 17 July 2019, https://www.ng.undp.org/content/nigeria/en/home/presscenter/pressreleases/2019/undp-launches-regional-stabilization-facility-for-lake-chad-.html.

385 Interview, 29 January 2020.

386 United Nations Joint Steering Committee, "NWOW Progress Updates. Nigeria," accessed 22 March 2020, https://www.un.org/jsc/content/nigeria; United Nations Joint Steering Committee, "The New Way of Working," accessed 22 March 2020, https://www.un.org/jsc/content/new-way-working.

387 Ibid.

388 Ibid.

389 Katharina Nett and Lukas Rüttinger, *Insurgency, Terrorism and Organised Crime in a Warming Climate. Analysing the Links Between Climate Change and Non-State Armed Groups* (Berlin: Adelphi, 2016); Janani Vivekananda et al., *Shoring Up Stability. Addressing Climate and Fragility Risks in the Lake Chad Region* (Berlin: Adelphi, 2019); Janani Vivekananda and Camilla Born, *Lake Chad Region. Climate-related Security Risk Assessment* (Berlin: Expert Working Group on Climate-related Security Risks, 2018); Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

390 Adam Day and Jessica Caus, *Conflict Prevention in the Sahel. Emerging Practice Across the UN* (New York: United Nations University, 2019), https://cpr.unu.edu/conflict-prevention-in-the-sahel-emerging-practice-across-the-un.html.

391 Interview, 19 September 2019.

392 Interview, 19 September 2019.

393 Interviews, 19 September 2019.

394 Interview, 19 September 2019.

395 Interview, 29 January 2020; Internal document [on file with authors].

396 Interview, 19 February 2020.

397 Interview, 29 January 2020; Internal document [on file with authors].

398 Interviews, 28 January and 12 February 2020.

399 Interviews, 29 January and 12 February 2020.

400 Interview, 29 January 2020; Beatrice Mosello and Lukas Rüttinger, *Linking Adaptation and Peacebuilding – Lessons Learned and the Way Forward* (Berlin: Climate Security Expert Network, 2019).

401 Oli Brown, *Climate-Fragility Risk Brief: North Africa & Sahel* (Berlin: Climate Security Expert Network, 2019).

402 Interview, 29 January 2020.

403 Joshua Busby et al., *The Double Burden of Climate Exposure and State Fragility* (Washington DC: Wilson Center, 2018), https://www.newsecuritybeat.org/2018/10/double-burden-climate-exposure-state-fragility/; United Nations and the World Bank, *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict* (Washington DC: World Bank, 2018).

404 Lake Chad Basin Commission and African Union Commission, *Regional Strategy for the Stabilization, Recovery & Resilience of the Boko Haram-affected Areas of the Lake Chad Basin Region* (N'Djamena: Lake Chad Basin Commission, 2019); United Nations and the World Bank, *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict* (Washington DC: World Bank, 2018).

405   Interviews, 22 and 27 January and 25 February 2020.

406   Interview, 22 January 2020.

407   Interview, 25 February 2020.

408   Interview, 25 February 2020.

409   Interview, 12 February 2020.

410   Interviews, 27 January and 12 February 2020; Lake Chad Basin Commission and African Union Commission, *Regional Strategy for the Stabilization, Recovery & Resilience of the Boko Haram-affected Areas of the Lake Chad Basin Region* (N'Djamena: Lake Chad Basin Commission, 2019).

411   Intergovernmental Panel on Climate Change, *Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press: Cambridge, 2007): Chp. 17.

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