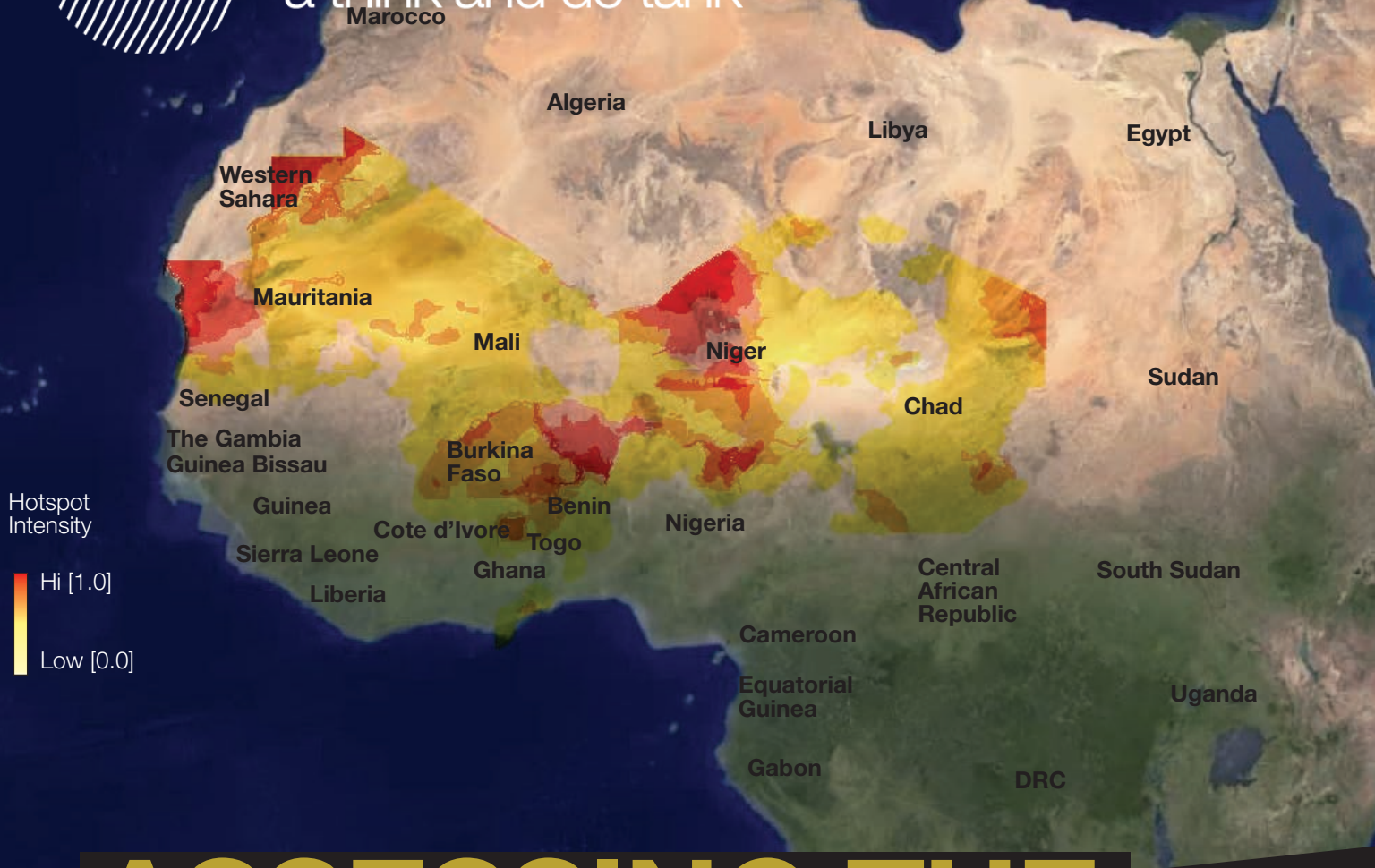




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# ASSESSING THE RELATIONSHIPS BETWEEN CLIMATE CHANGE AND SECURITY IN WEST AFRICA

Peter Schmidt and Robert Muggah

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# ASSESSING THE RELATIONSHIPS BETWEEN CLIMATE CHANGE AND SECURITY IN WEST AFRICA

Peter Schmidt and Robert Muggah<sup>1</sup>

## OVERVIEW

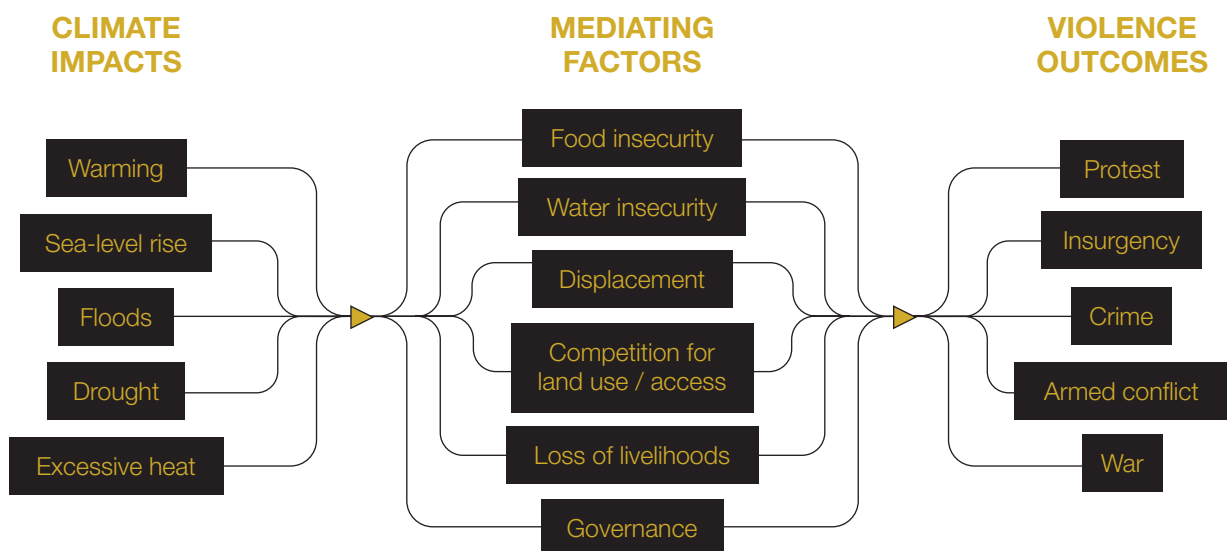
Climate change has alarming security implications for West Africa. A rise in global temperature over 3°C by the end of the century (or earlier) will disrupt rainfall and delay rainy seasons.<sup>2</sup> A higher frequency of extreme weather events such as heat waves, droughts, and flooding will affect food production. Sea level rise will salinize land and overwhelm infrastructure, forcing millions of people to move, mostly within their own countries, and often to over-crowded cities and informal settlements.<sup>34</sup> The relationships between the region's changing climate, disruption of livelihoods, deepening food insecurity, and social unrest and violence are increasingly difficult to ignore. This bulletin considers the scientific evidence shaping these complex relationships, with particular attention to coastal zones, transhumance areas and other precarious regions.

## CONCEPTS

Climate change comprises a wide range of processes including sudden changes in temperature, unusual fluctuations in precipitation and the onset and frequency of extreme weather events. These phenomena can exacerbate socio-economic conditions that may in turn precipitate a higher risk of tension and violence onset. The mediating factors that shape the onset and intensity of unrest include rising food insecurity, migration and displacement, urbanization, growing

competition over pasture and arable land and the presence or absence of governmental conflict-mediation and resource-allocation systems.<sup>5</sup> The pathways are not linear but they can generate negative feedback loops. What matters is the way these factors influence livelihoods, exacerbate inequalities and reinforce grievances between groups. The figure below highlights the multi-causal pathways linking climate impacts, mediating factors and violence outcomes.

### Climate change, mediating factors, violence outcomes



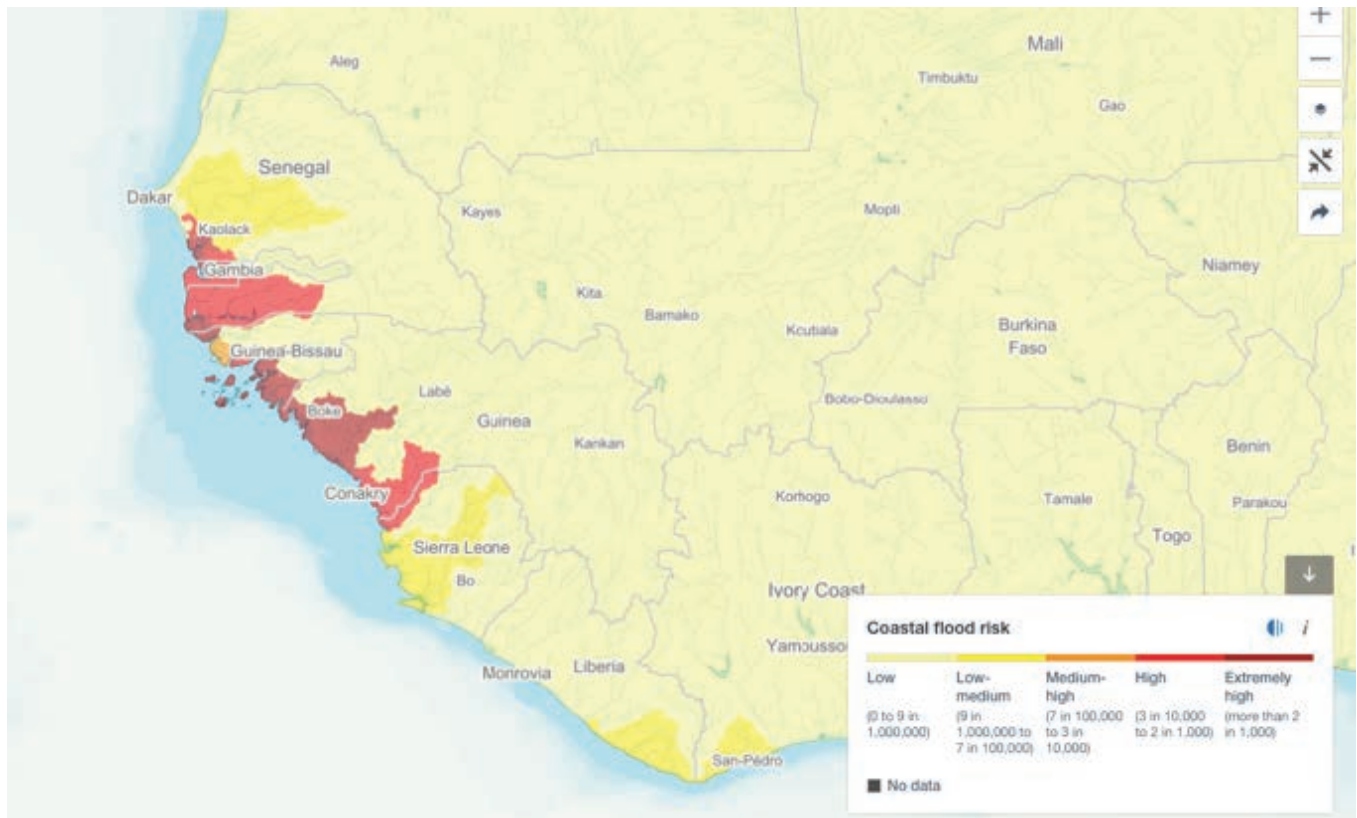
## THREAT MULTIPLIER

Climate change is a threat multiplier in West Africa. For example, coastal populations are facing a significant risk of sea-level rise that could affect between 72 and 94 million people, including in cities such as Abidjan, Accra, Dakar and Lagos. Acidification and salinization could devastate fisheries, reducing by 30% or more the maximum catch potential in the region. Meanwhile, variable weather patterns are disrupting relationships between pastoral and farming communities across the Sahel, and especially in Burkina Faso, Mali, Nigeria and Niger. Fluctuations in water availability are especially risky for populations dependent on rain-fed agriculture, including up to 60 million people in the Lake Chad Basin.

Accelerated desertification and rainfall variability, combined with latent political, economic and social tensions, are triggering violent disputes. For example, conflict between Shuwa Arabs and Fulani pastoralists around Lake Chad's Southern Basin is common and has hastened recruitment into extremist Islamic groups such as Boko Haram and Islamic State.<sup>6</sup> More than 64% of West Africa's population is under 24 and 60% of the active labor force relies on subsistence agriculture. As livelihood opportunities dry up, the likelihood that the unemployed join violent extremist groups is rising, as is their likelihood to join criminal organizations involved in trafficking, the black market and sex work. "Maladaptive" conflict-resolution initiatives insensitive to climate change run the risk of undermining climate resilience, while poorly conceived and executed climate-adaptation initiatives threaten to exacerbate conflict.<sup>7</sup>

# COASTAL THREATS

## Coastal Flood Risk in West Africa<sup>8</sup>



Coastal areas are essential to sustaining the livelihoods of many West Africans. Some 85% of the Economic Community of West African States's (ECOWAS') estimated 103 million inhabitants are concentrated in 12 coastal countries, and nearly half of West Africa's population lives within 200 km of the ocean.<sup>9,10</sup> They are also rapidly urbanizing: annual urban population growth rates in the region are from 4.2% to 5.7% higher than the global average, and between 2015 and 2050 the proportion of the region's population living in cities will rise from 45% to 60%, driven in part by climate change.<sup>11,12</sup> As a result, coastal areas are experiencing severe stress, including significant coastal retreat and soil degradation due to overuse. Erosion rates are particularly high in Benin, with an average annual loss of 4 meters of land along 65% of the coast.<sup>13</sup> Senegal suffered the highest economic blow, with coastal degradation costing the equivalent of 7.6% of the country's GDP in 2017.<sup>14</sup>

The West African coast between Mauritania and Nigeria is predicted to experience rates of sea-level rise considerably above the global average.<sup>15,16</sup> This change, along with increased frequency of extreme weather events, will likely accelerate coastal erosion; flood low-lying areas; increase salinization and contamination of soil and water; affect groundwater levels; contribute to infrastructure losses; disrupt economic activity; and increase transmission of meningitis, cholera and yellow fever, among diseases.<sup>17,18</sup> Coastal erosion along Ghana's 580km coastline has already forced more than half of the city of Keta to flee and has transformed the nearby coastal town of Fuveme into an island. In Senegal's Saint-Louis, rising seas have destroyed houses, flooded streets and damaged crops.<sup>19</sup> In August and September of 2020, as many as 760,000 people across Central and West Africa were hit by severe riverine flooding.<sup>20</sup>



Africa's population in low-elevation coastal zones is rising at an annual rate of 3.3%, more than double the global average.<sup>21</sup> Much of this growth is taking place in four of the subregion's largest cities—Lagos, Abidjan, Dakar and Accra, all of which are located on the coast. Coastal population density is expected to increase significantly: demographers forecast that between 72 to 94 million people will inhabit West Africa's low-lying urban centers by 2050.<sup>22</sup> Meanwhile, roughly 5,500 km

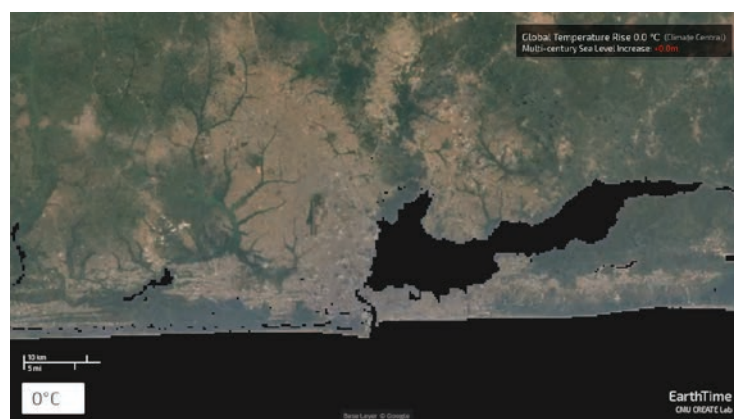
of the region's coastline could be severely degraded due to flooding associated with rising sea levels.<sup>23</sup> This trend has already led to a significant number of deaths from flooding and contamination. For example, flooding and the diseases generated by associated degradation and effluent contributed to an estimated 13,000 deaths a year in Benin, Cote D'Ivoire, Senegal and Togo combined.<sup>24</sup>

### Forecast sea-level rise and its impact on West African cities<sup>25</sup>

Dakar 0° C



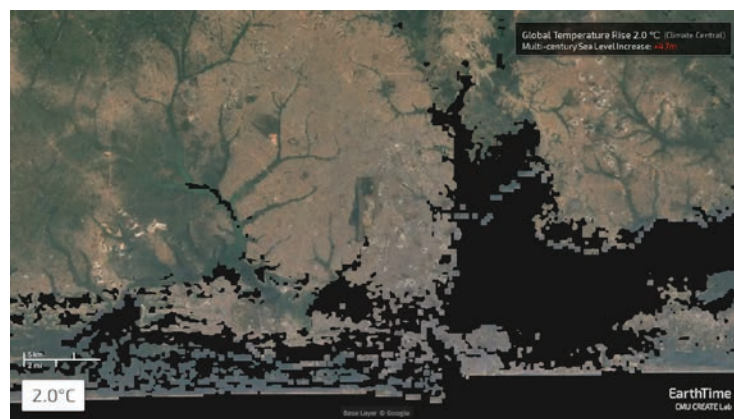
Lagos 0° C



Dakar 2° C



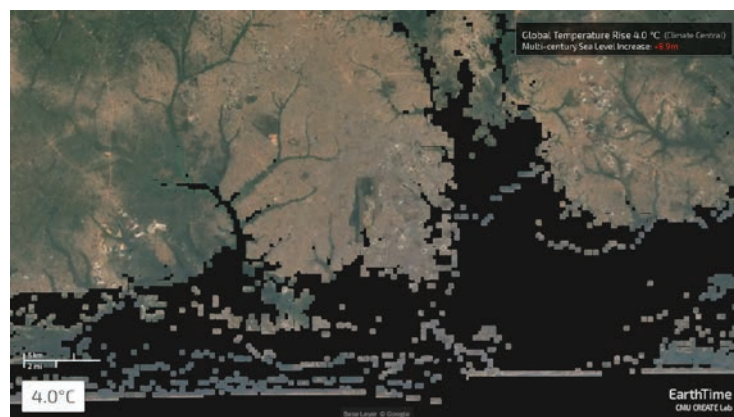
Lagos 2° C



Dakar 4° C



Lagos 4° C



Climate change will severely disrupt coastal economies. Coastal cities and commerce are currently responsible for generating approximately 56% of the region's GDP. Major ports and industrial facilities accounting for more than \$150 billion in annual trade form the backbone of the national economies located within the coastal zone.<sup>26</sup> In addition, coastal agriculture produces between 9% and 67% of these countries' national GDPs, and tourism accounts for an average 2% of GDP.<sup>27</sup> In 2017 alone, the cost of environmental degradation (COED) in Senegal, Togo, Benin and Cote d'Ivoire totaled \$3.8 billion, or 5.3% of those countries' combined GDP.<sup>28</sup>

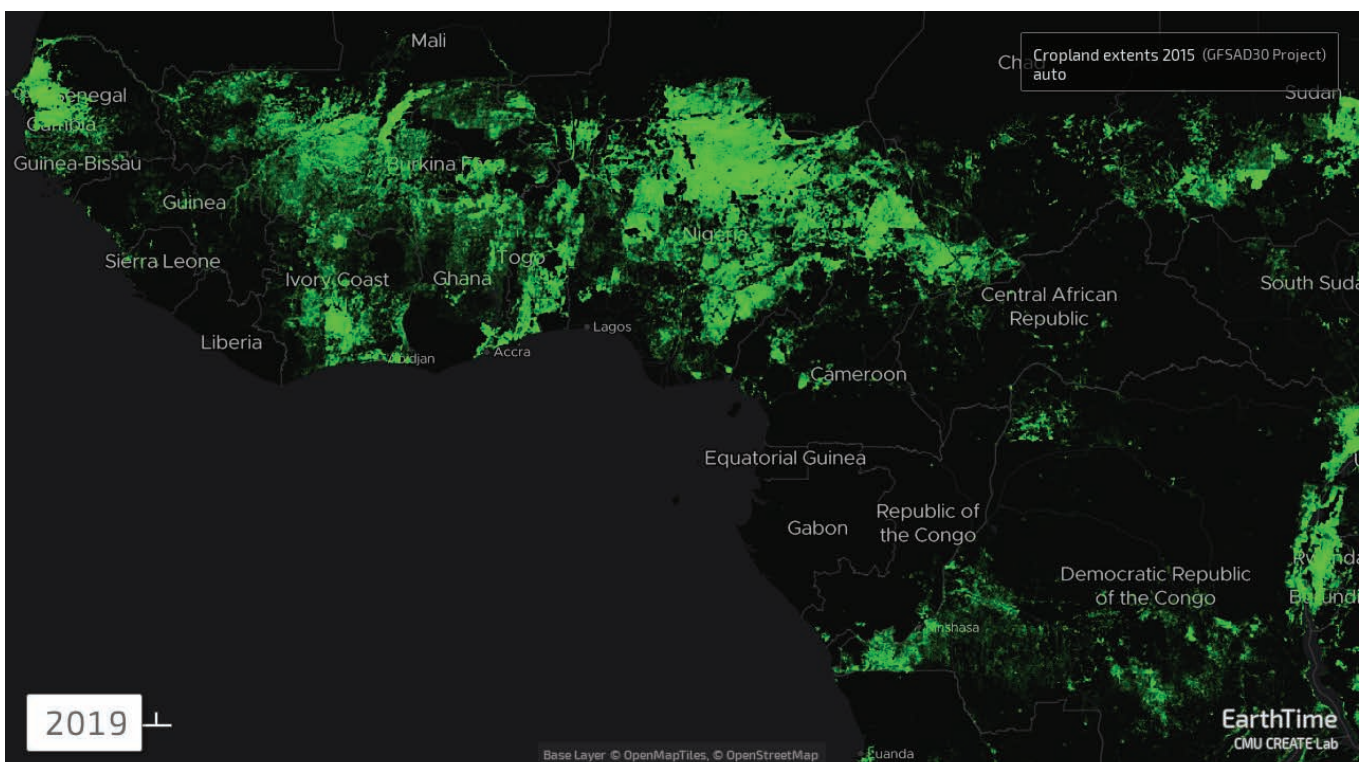
These climate-driven changes pose a grave threat to food security. Fish protein constitutes more than 30% of the total protein intake in Senegal, the Gambia, Guinea, Sierra Leone, Côte d'Ivoire, Ghana, Togo and Nigeria.<sup>29</sup> At least 4.8 million people in West Africa, or 16% of the coastal population, rely on fishing to sustain their livelihoods.<sup>30</sup> Yet fishing across the region is threatened. As seawater warms, fish decrease in size and productivity, decline in number, and migrate from the region. Increases in water temperatures, acidification and bleaching can alter fish physiology, including size and reproductive capacity, thus lowering their market

value.<sup>31</sup> Models forecast that by 2050 the Maximum Catch Potential could decline by 30% or more in the Gulf of Guinea region.<sup>32</sup>

These pressures on key industries will also generate social and security-related challenges. In Senegal, for example, rising temperatures have already led to the northward migration of sardinella, the region's most important species.<sup>33</sup> Senegal's coastal towns have registered significant declines in their annual catch. Fishermen are forced to cross the border into Mauritania to fish, which has led to violent exchanges between Senegalese fishermen and the Mauritanian coastguard.<sup>34</sup> As sea-level rise accelerates, violent disputes of the kind seen in Senegal's fishing villages will intensify and lead to further instability. As access to fish and arable land decreases, young men in Agbavi, Togo have joined criminal syndicates involved in fuel smuggling and beach-sand mining, an illegal enterprise that worsens erosion.<sup>35</sup>

## TRANSHUMANCE DYNAMICS

### Cropland extent<sup>36</sup>





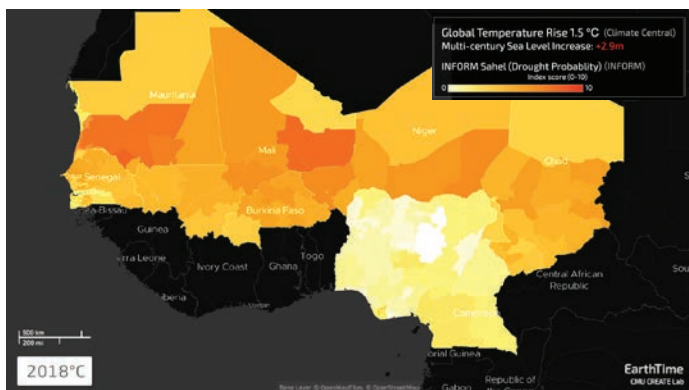
Climate change is accelerating transnational migration and displacement. It is also accelerating the spread of organized violence in the Sahel. The region is considered one of the world's most vulnerable to extreme heat. Climate vulnerability is compounded by the region's high dependence on rainfed agriculture and natural resources, weak governance, rapid population growth and chronic humanitarian crises due to recurrent drought, flooding, crop failures, epidemics and violent conflict.<sup>37</sup> Prolonged water scarcity, longer dry seasons and sustained higher temperatures could exacerbate low-level conflict and trigger forced migration, issues that already impact the region.

Climate change contributes to a vicious cycle whereby environmental impacts exacerbate existing conflicts which in turn increase the vulnerability of poorer populations to further climate impacts.<sup>38</sup> Flashpoints include deepening disputes between farmers and

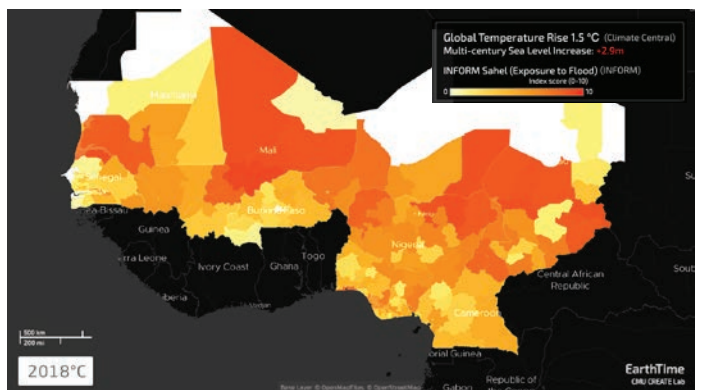
pastoral communities. Approximately 20 million Sahelian pastoralists travel southward with their livestock during the dry season then back northward during the wet season.<sup>39</sup> The forecasted intensification of drought and shortening of rainy seasons, as well as the increased interannual variability of rainfall, imposes stress on livelihoods that are already highly dependent on rapidly diminishing water access.<sup>40</sup> These changes disproportionately harm female pastoralists, whose multiple reproductive, childcare and labor demands mean they have less time to adjust their livelihoods to changing climatic and ecological conditions.<sup>41</sup>

### West Africa Climate Risks at 1.5° C of Warming<sup>42</sup>

Drought Risk Areas



Flood-Risk Areas



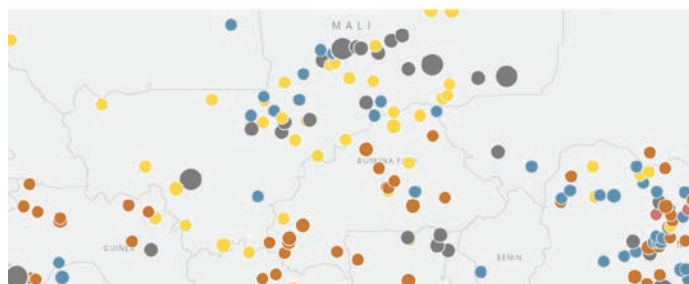
Push factors such as reduced water access and communal tensions - together with the involvement of military, paramilitary and police actors - often push pastoralists into new territories. Rising instability in turn can result in (violent) competition and tension with farmers, especially when customary dispute resolution systems are eroded. Political and economic elites may also exacerbate tensions, particularly when business interests are involved.<sup>43</sup> Disputes may escalate into conflict due to competition for water and from

pastoralists over-using farmers' fields or crops. Rising instability is increasingly likely because pastoralists are forced into areas that were previously exclusively agricultural.<sup>44</sup> Increased variability of the dry and wet seasons means that pastoralists arrive at different locations at different times, undermining long-standing seasonal resource-sharing relationships.<sup>45</sup>



## Rising Violent Tensions at the Burkina Faso-Mali Border<sup>46</sup>

2015



### Point Layer

- Battles
- Violence against civilians
- Explosions/Remote violence
- Riots
- Protests
- Strategic developments
- Multiple event types

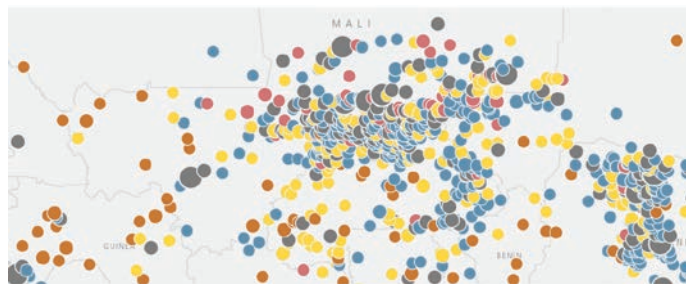
### EVENT DATE:

From: 01/01/2015 To: 01/01/2016

### EVENT TYPE:

- Battles
- Armed clash
- Government regains territory
- Non-state actor overtakes territory
- Violence against civilians
- Explosions/Remote violence
- Riots

2019



### EVENT DATE:

From: 01/01/2019 To: 01/01/2020

### EVENT TYPE:

- Battles
- Armed clash
- Government regains territory
- Non-state actor overtakes territory
- Violence against civilians
- Explosions/Remote violence
- Riots

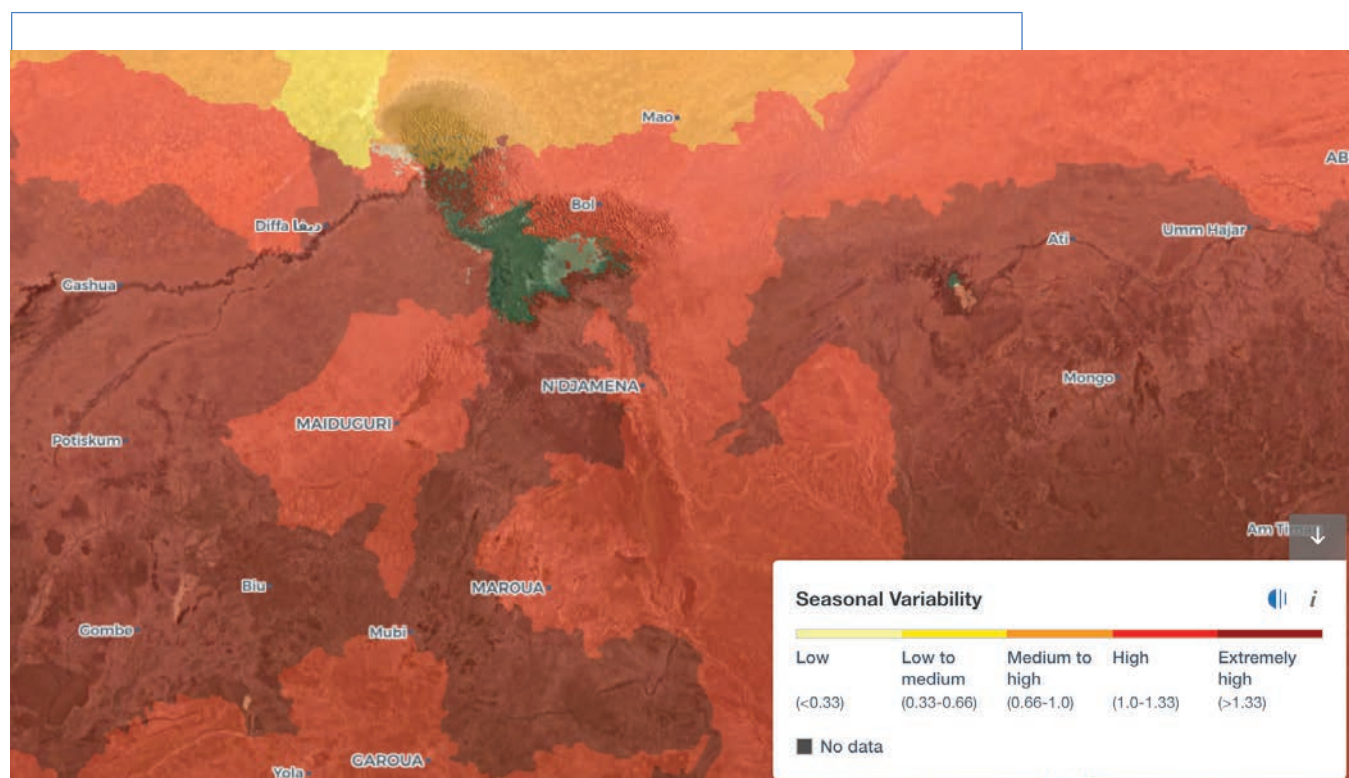
Violent clashes are more likely in areas already destabilized by violence and with more limited state presence, including central and northern Mali and in central and northern Nigeria.<sup>47</sup> Since Mali's 2012 Tuareg secessionist rebellion, pastoralists have been forced southward from the Gao region into the Mopti and Inner Niger Delta regions, and into nearby regions of Burkina Faso and Niger. Attacks by insurgent groups target state officials and religious opponents and typically occur along ethnic lines. The rise of violent extremist groups has inspired similar violent activism in nearby countries. The rise of armed extremist groups is linked to increased suppression of women's groups, reinforcing already-dramatic gender disparities in the region.<sup>48</sup>

In the middle-belt region of Nigeria, farmer-pastoralist clashes are claiming more lives than in the rest of Western Africa combined.<sup>49</sup> The southward migratory drift of pastoralism has accelerated, contributing to greater conflict in southern regions. These shifts are due in part to unreliable access to water and to endemic violence caused by so-called bandit groups in Zamfara State, on the border with Niger — another example of multiple risk factors including climate change, latent grievances and weak state institutions. In recent years, thousands of Fulani pastoralists were killed by Boko Haram in the Lake Chad region, and tens of thousands have been displaced, many losing their livestock and ending up destitute. The UN High Commissioner for

Refugees (UNHCR) estimates that over 62,000 people were displaced by pastoralist-farmer clashes in Nigeria in 2017, and numbers have continued to escalate to the present.<sup>50</sup>

The Lake Chad Basin (LCB) is a case study of the climate-security nexus. Because Lake Chad is only a few meters deep, it is particularly sensitive to a changing climate. Following a peak in the late 1960s, the Lake's surface area receded during a series of devastating droughts in the 1970s and 1980s. Since then, its surface area appears to have increased as greater precipitation swelled its input rivers. Climate change threatens to disrupt the enlargement and contraction cycle of the LCB. At a minimum, it will exacerbate interannual variability - meaning changes to the duration of the rainy season, more extreme rainfall and drier dry periods. The possible benefits of increased rainfall may therefore be offset by the risk of catastrophic floods.<sup>51</sup> As regular, reliable access to water decreases, so too will access to arable land: the Sahel is moving south by 1,400 square miles a year.<sup>52</sup> The LCB's population, which is growing at an annual rate of nearly 3% — the global growth rate is just 1.1% a year — will be forced to survive on an ever thinner margin.<sup>53</sup> The Lake currently sustains approximately 50 million people.<sup>54</sup>

### Projected Seasonal Rainfall Variability in LCB by 2040<sup>55</sup>



Dramatic changes to weather patterns will disrupt an already precarious economy. Climate shifts can tip households that are already living at the margins into total destitution. Crop failures there can result in extreme poverty and higher levels of mortality and morbidity. Rising food insecurity, combined with reduced access to basic resources, deepening economic marginalization and poor health can increase desperation, fuel grievances and radicalization and, where mobilized by elites, increase the likelihood of outright violence. As of late 2020, there are 2.5 million people displaced, 6.9 million severely food insecure and 10.7 million in need of humanitarian assistance.<sup>56,57</sup> LCB is currently the site of the second largest displacement crisis on the planet.<sup>58,59</sup> The region, which is home to nearly 70 ethnic groups, became particularly volatile with the rise of Boko Haram in 2009.<sup>60</sup> A number of national military, armed opposition, extremist and vigilante groups all operate in the region.<sup>61</sup>

Such resource scarcity can produce crises that cross borders and provoke further conflict. Past experience supports this: between 1980 and 1994, for example, nearly 60,000 Nigerians followed the receding lake waters into Cameroonian territory in search of fishing, cultivation and livestock rearing.<sup>62</sup> At the height of the drought, 3,000 Chadian soldiers attacked and occupied

nineteen islands and six villages in Nigerian territory. As a consequence of the war, the border between Chad and Nigeria was closed until 1986.<sup>63</sup> Likewise, recurrent clashes between Shuwa Arabs from the Chadian east and the Fulani pastoralists from the Nigerian southwest have also broken out near the Lake's southern pool.<sup>64</sup> As populations are compressed in the absence of opportunities and structures to mediate tensions, the potential for violent escalation will increase.

Military interventions in the LCB area have also increased the vulnerability of local populations to climate shocks.<sup>65</sup> Indeed, Boko Haram spread to Cameroon in 2014 and Niger and Chad in 2015, and post-9/11 U.S. and European-funded initiatives have further militarized the region.<sup>66</sup> Deaths due to armed conflict have climbed from less than 100 a year in the 1990s to over 10,000 a year today.<sup>67</sup> Current counter-terrorism operations are focused on two Jihadi militant groups sustaining insurgencies in Burkina Faso, Mali and Niger - the al Qaeda-affiliated Jama'at Nusrat al-Islam wal-Muslimin (JNIM) and the Islamic State in the Greater Sahara (ISGS). There is also an assortment of government forces and community militia that are implicated in such operations. Abuses by government military and proxies are routine.<sup>68</sup>

# RESPONSES

The links between climate change and insecurity in West Africa are growing clearer. Several national, bilateral and multilateral entities are already implementing subnational and regional responses to them. A well known example is the “great green wall,” an US\$ 8 billion plan to reforest 247 million acres of degraded land in a broad, 4,815-mile swathe along the Sahel’s southern edge from Dakar to Djibouti. Launched in 2007 by the African Union, the project, which is funded by the United Nations, the World Bank and the European Union, is expected to reach completion in 2030. The restored land is predicted to absorb nearly 250 million metric tons of CO<sub>2</sub> from the atmosphere.<sup>69</sup> Coastal countries such as Nigeria and Senegal have seen relative success with such ‘greening’ efforts, afforesting 5 million and 25,000 hectares, respectively. However, terrorism and corruption have hampered the project in landlocked Central African countries like Burkina Faso.<sup>70</sup>

Meanwhile, the Nigerian government has sought to quell farmer-pastoralist conflict using military force, often through military operations such as Exercise Cat Race and Operation Whirl Stroke. These have yielded mixed results. Some areas have registered reduced conflict, but many villages remain empty, with security officers unable to guarantee displaced communities a safe return. Additionally, the Nigerian authorities introduced a plan to establish “cattle colonies”: 5,000 hectare clusters of ranches with grass, water and veterinary services as well as schools, hospitals and marketplaces.<sup>71</sup> The proposal was accepted in the sparsely populated north-eastern and north-western states but criticized in Nigeria’s Middle Belt for its echoes of colonial land policy, concerns with land scarcity and the uneven rollouts of federal subsidies. Nevertheless, the program is moving forward in 10 states with the government devoting roughly \$473 million over the next ten years.<sup>72</sup>

Mounting environmental and security issues have prompted calls by international NGOs and local activists for “environmental peacebuilding,” a two-birds-with-one-stone approach wherein warring parties

find common ground tackling shared environmental threats. The precise dimensions of this strategy are still in development, but these proposals do signal a growing desire for policy responses that consider climate change and conflict in tandem.<sup>73</sup> A project led by the Consultative Group on International Agricultural Research (CGIAR), Vodafone and Ghana’s Council for Scientific and Industrial Research, among others, has sought to improve the preparedness of Ghanaian farms to adapt to climate risks through a public-private climate information services initiative. By the end of 2019, the project had succeeded in providing real-time climate information to 300,000 farmers, 21% of whom were women.<sup>74</sup> A key priority is to ensure that climate-related peacebuilding efforts do not unintentionally undermine climate resilience. Another important consideration is making sure that climate adaptation projects do not exacerbate underlying tensions.<sup>75</sup>

It is not necessarily the case that climate change will precipitate conflicts between and within states, though it certainly increases the risk. Future dispute resolutions may look to the 1964 Lake Chad Basin Commission (LCBC), which delegates conflicts between Mali, Niger, Nigeria and Chad to international bodies such as the International Court of Justice. The LCBC is also helping lay the foundations for climate-specific processes such as the “Transaqua” initiative that transfers water from the Congo Basin to Lake Chad.<sup>76</sup> Such transnational coalitions will be critical for addressing impending crises at the intersection of climate change and conflict. Ultimately, a comprehensive response to the climate and conflict-related challenge facing vulnerable areas of West Africa will require acknowledging their complex interconnections and wide human security implications.

# ENDNOTES

- 1 Peter Schmidt and Robert Muggah were responsible for authoring this paper. Thanks to Caio Cotta Pereira for inputs. Special appreciation also for Adam Day, Sascha Fong, Janini Vivekananda, and Karim Soumana for their substantive comments. Credit is due to Switzerland and Germany for their financial assistance. All errors and omissions are the fault of the authors.
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