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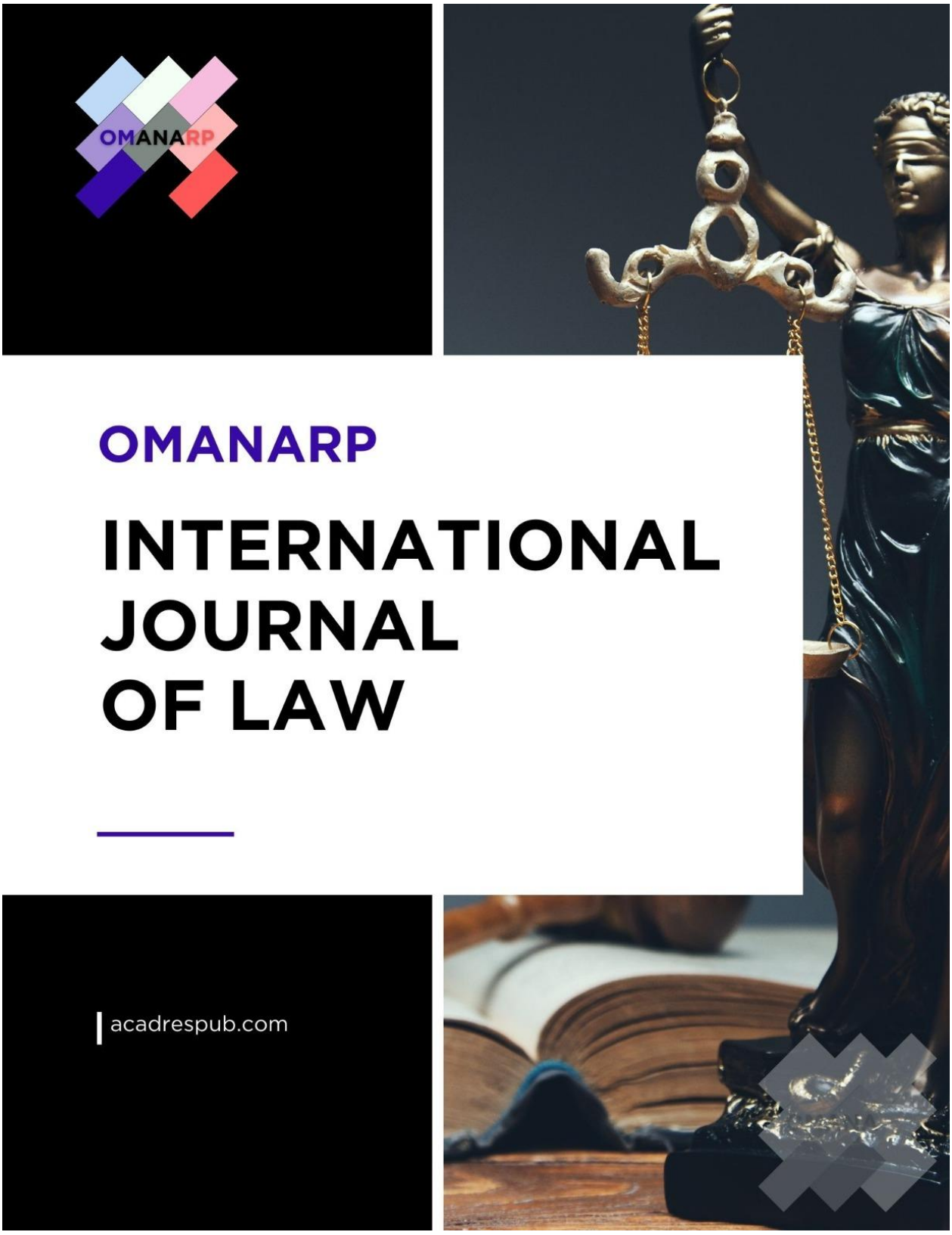

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CLIMATE CHANGE AND WEAPONS NEXUS IN THE GULF OF GUINEA

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ABSTRACT

The Gulf of Guinea is facing significant challenges that have profound consequences on peace, social conflict, social cohesion, community resilience, adaptation, development, and national security due to climate change. Climate change is the driving force behind the unprecedented demand for small arms and light weapons in the Gulf of Guinea, which significantly exaggerated existing threats and their consequences, and is responsible for many serious security threats and breaches that are devastating the region. Engaging the disarmament and arms control schools' theoretical frameworks, the study establishes that it is for the reasons to fight presented by climate change that weapons are proliferated and used in violent crimes/conflicts that have made life very precarious in the region. The study concludes that infusing peacebuilding into adaptation plans; making up-to-date information relating to coping strategies, mitigation, and weather forecasts readily available; deploying early warning and early response mechanisms, and good governance are the most auspicious and responsive responses to climate change that eliminates the need for weapons, engenders peace and community resilience in process of adapting to climate change.

Keywords: *Climate change, Gulf of Guinea, social conflict, community resilience, social cohesion, small*

INTRODUCTION

The catastrophe associated with climate change knows no geographic boundaries. They are, however, more manifest and grievous in fragile developing economies that rely heavily on natural resources, rainfed agriculture, deficient in adaptive capacity, bestride by weak weapons control regimes, and irresponsible governance structures - the bulk of which are in Africa. Climate change's impact on pastoralism, fishing, Agro-produce, water scarcity, food security, displacement, and migration directly impacts social conflict, social cohesion, community resilience, and national security.

The Gulf of Guinea is one of such geographic areas housing developing economies that rely heavily on natural resources, rainfed agriculture, deficient in adaptive capacity, bestride by weak weapons control regimes, and irresponsible governance structures so climate change is critically devastating human existence, social cohesion, and community resilience as well and precipitating social

conflict. The prediction is that it will get worse.[1] Unfortunately, the countries of the Gulf of Guinea region - Benin, Cote D'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone, and Togo - contributions of greenhouse gasses[2] and weapons production are insignificant.[3]

Owing to its security and economic relevance, the climate change and weapons proliferation nexus (mix) in the Gulf of Guinea should be of great concern to statesmen, academics, public policy pundits, and governments. The Gulf of Guinea is a hub for deep sea fishing, oil, and gas exploration;[4] a hub for Central and Southern African maritime trade, and a transit route for ships heading from Europe to Africa avoiding the Gulf of Aden;[5] a hub for illegal unreported and unregulated fishing, illicit trade of Small Arms and Light Weapons (SALW), trafficking of human beings, and dumping of toxic waste.[6] Daily, the Gulf has about 1,500 Fishing Vessels, Tankers, and Cargo Ships navigating its waters.[7] Consequently, the Gulf is a very strategic sea route in the world. However, its relationship with the Atlantic Ocean (an inlet of the Atlantic Ocean) the Volta and Niger Rivers (its tributaries), the availability of offshore oil and metal ore deposits,[8] oil exportations, and money-spinning business has made the Gulf also a hub of SALW proliferation,[9] trafficking, and use.

Although low in elevation and densely populated, climate change has added to making the Gulf very vulnerable to coastal flooding,[10] vulnerable to climate-sensitive diseases,[11] vulnerable to increasing temperatures and shifting rainfall patterns,[12] vulnerable to communal conflict due to declining natural resources - fish stock, river flow in the major River Basins; vulnerable to loss of biodiversity, vulnerable to oil spillage,[13] vulnerable to the dangers of SALW proliferation.

The Gulf of Guinea region is very much vulnerable to the vagaries of climate change's handshake with SALW proliferation. High population density, economic fragility, mindless governance, unplanned cities, illegal settlements, lawlessness (jihadism, militancy, piracy,[14] kidnaping, human trafficking, and illegal fishing), and coastal flooding engendering receding fish stock, etc. have all joined forces to deepen climate change crises in the Gulf of Guinea.[15] Despite these threats, the potential impacts of climate change and weapons nexus in

[1] See USAID Climate Risks in West Africa: Regional Risk Profile: Factsheet 2018; see also 2020 International Bank for Reconstruction and Development / The World Bank Technical Report on the effects of climate change on coastal erosion and flooding in Benin, Côte d'Ivoire, Mauritania, Senegal, and Togo May 2020

[2] See Sierra Leone's Intended Nationally Determined Contribution (INDC). the Environment Protection Agency Sierra Leone. government of Sierra Leone; see N. Bhalla "Ghana's historic slave forts are being swallowed by rising seas." 1 November 2022. 11:39 AM GMT+1Updated 2 years ago. Available at https://www.reuters.com/business/cop/ghanas-historic-slave-forts-are-being-swallowed-by-rising-seas-2022-11-01/

[2] See Sierra Leone's Intended Nationally Determined Contribution (INDC). the Environment Protection Agency Sierra Leone. government of Sierra Leone; see N. Bhalla

[3] See C.V. Odoeme, 'The role of law in controlling proliferation of small arms and light weapons: a case study of anglophone West Africa.' (PhD thesis, University of Abuja Nigeria, July 2018.)

[4] See C.V. Odoeme, C.V. 'Corporate accountability in the Nigerian oil and gas sector: coping with uncertainties.' (2013) 39(4) *Commonwealth Law Bulletin*, pp 741 - 765.

[5] See C.V. Odoeme, 'Armed intervention and the challenges of maritime security in the Gulf of Aden, 2008-2011', in A.M. Okolie (ed) *Norms and practices in global political economy* (Berlin, Galda Verlag, 2015) pp 137-157.

[6] See J. Corte-Real maritime security in the Gulf of Guinea, threats, and challenges.' Negócios Estrangeiros N. º 22. Edição Digital, julho de 2022

[7] European Union (EU) Maritime Security Facts (2021): the Gulf of Guinea. Available at eeas.europa.eu

[88] Gulf of Guinea summary. Available at Britanica.com

[9] See C.V. Odoeme, 'Weapons proliferation and Nigerian national security: the human security conundrum,' in C. Obiageli, I. Ukwuoma, & N. Ogwo (eds) *Studies in state and security* (Kaduna, 2023), pp 183 - 201

[10] https://pubmed.ncbi.nlm.nih.gov

[11] See M. Doumbia et al. 'Effects of Climate Variability on Malaria Transmission in Southern Côte d'Ivoire, West Africa.' (2023) 20/7102 *International Journal of Environmental Research Public Health*. https://doi.org/10.3390/ijerph20237102; see also The World Bank "**climate and health vulnerability assessment for Ghana" Report 2023.**

[12] See note 1 above

[13] Particularly in the oil producing areas see S. Adam & C.V. Odoeme, *Law and practice of oil spillage laws in Nigeria* (Jos, Global Link Resources, 2014)

[14] See C.V. Odoeme, 'Legal and political quandary in the securitization of the Gulf of Aden' (2013) X/2 Journal *of Maritime Research* pp 3 -110

[15] Particularly the Niger Delta. See Note 13 above

the Gulf of Guinea have not yet been adequately studied, whence this study.

This work has six sections. Section one provides an overview of the study area as well as develops an understanding of the dynamics of climate change in the Gulf of Guinea. Section two provides a synthesis of the current situation and trends of the impact of climate change-induced volatility on peace, security, community resilience, adaptation, and development in the Gulf of Guinea. Section three explores climate change's impact on existing threats, volatility, and conflict drivers in the region as a threat magnifier/multiplier. Section four examines how SALW interfaced with climate change to exacerbate violent crimes and conflicts that impede peace, adaptation, community resilience, and development in the Gulf of Guinea. Section five discusses responsive approaches to addressing climate change in the Gulf of Guinea. Section six is the author's concluding thoughts.

Methodology

This work reviews literature (documents, gazette /official reports, newspapers, and scholarly articles) on climate change, security, conflicts, weapons proliferation, community resilience, adaptation, and development with the objective of identifying the impact of climate cha[17]nd weapons nexus on peace, security, c[illegible]ty resilience, and development in the Gulf of Guinea with the view to proffering responsive approaches to dealing with same.

Discussion

Climate change in the Gulf of Guinea

The Gulf of Guinea spans 11,000 square kilometers (4,247sq miles) that run from Liberia to Gabon.[16] It is a gateway between the Sahel, the Lake Chad Basin, and the Atlantic Ocean.[17] Its coastline is made up of a narrow continental shelf and boosts of oil and hard minerals deposits as well as major Seaports such as Malabo, Port Harcourt, Calabar, Doula, Bata, Libreville, and Port Gentil.[18] The Gulf has recorded a mean sea level rise of about 8.9 cm over the entire altimetry period 1993 - 2021.[19] Its urban corridor, which extends over 1,000 km from Abidjan to Lagos, via Accra, Lomé and Cotonou, has a population of about 40 million, making it the largest conurbation in Africa.[20] The multiplication of intermediary cities, resulting in a virtually unplanned territorial rebalancing, complicates this urban reality.[21] Its urban coastline measuring about 500km - from Accra to Niger Delta - has the highest population density in the region.[22] These beauties of the Gulf of Guinea continental shelf position it as a hub for sea trade that attracts piracy and about 95% of all kidnapping for ransom at sea;[23] and a frontline environment susceptible to climate change.[24]

The Gulf houses the world's largest and fastest-growing populated cities and industrial zones. However, climate change-induced environmental degradation and vulnerabilities are home in the Gulf of Guinea. Its manifestation varies from the north to the south depending on the time of the year i.e. climatic seasons. Generally, they include dense population, coastal flooding due to climate-induced sea level rise;[25] climate-sensitive diseases[26] (meningitis in dry areas and malaria in coastal areas) due to increasing temperatures and shifting rainfall patterns;[27] communal conflict due to struggle over declining natural resources (available arable lands, increasing salinity of coastal soils advancing inland); declining fish stock due to coastal degradation, illegal, unreported, unregulated fishing and pollution from land-based runoff after heavy rain falls predicted to lead to greater loses in Ghana, Côte d'Ivoire, Nigeria, Liberia, Togo, and

[16] F. E. Kemgang-Ghomsi, et al 'Sea level variability in Gulf of Guinea from satellite altimetry.' (2024) Scientific reports. Available at https://doi.org/10.1038/s41598-024-55170-x

[17] https://www.afd.fr/en/regional-office/gulf-guinea

[18] Gulf of Guinea: Gulf, Atlantic Ocean. Available at https://www.britannica.com/place/Gabon-Estuary

[19] See note 16 above

[20] Gulf of Guinea Regional Strategy 2020-2024. Available at file:///C:/Users/Dr.%20C.V.%20Odoeme/Downloads/gulf-guinea-regional-strategy-2020-2024.pdf

[21] Ibid

[22] See note 1

[23] EU Maritime Security Factsheet: The Gulf of Guinea 2021. Available at https://www.eeas.europa.eu/eeas/eu-maritime-security-factsheet-gulf-guinea_en

[24] See note 16

[25] https://pubmed.ncbi.nlm.nih.gov

[26] See Note 11

[27] See note 1

Sierra Leone;[28] declining river flow in major River Basins such as the Lake Chad; loss of biodiversity due to inundation from sea level rises among others; SALW proliferation due to closeness to the Atlantic Ocean, the Sahel Region, and porous borders. Additional demands on infrastructure due to climate-induced displacement, fragility of states, maritime /ocean pollution and insecurity from shipping, high sea fishing, piracy, and state suppression of human rights.[29] These, in combination with other oil and shipping-related environmental degradations replete in the coasts of states of the region, have exposed the population to higher risks. Availability of SALW due mainly to unguarded waters, expatriate and criminal ventures, militancy, piracy, insurgency, jihadism, banditry, and private security operatives have added pressure for the survival of the rapidly growing population of that region who hitherto were dependent on, now endangered, rainfed agriculture, aquaculture (fishing), and pastoralism. Cumulatively, they have a negative direct impact on the well-being of the communities and populations inhabiting the region due to food insecurity, migration, displacement, and other conflict matrices.

The fact that many of the residents reside in small towns and villages that are situated along subsiding coastlines and river deltas means that they are at higher risk. Consequently, residents are compelled to move closer and deeper to marshy shorelines around affected cities. This undermines the capacity of natural barriers and ecosystems to protect cities from storm surges and flooding. The lack of drainage systems encourages the emergence of wetlands and rising groundwater that turns habitable areas into wetlands.

Specific examples of the impact of climate change in the Gulf of Guinea are examined further:

Sea Level Rise: this is considered the most devastating of all climate change's impact on coastal regions, particularly the low-lying coastal communities[30] in the Gulf of Guinea. The impacts include severe flooding, coastline erosions, coastal wetlands destruction, saltwater infiltration into freshwater, higher groundwater levels, elevated water levels that can cause coastal flooding, subsurface fluid abstraction, changes in hydrological regimes, rapid coastal development, land pressure, and shortage of affordable housing.[31] Incidentally, the Gulf of Guinea has many of its capitals, major seaports, and megacities in the coastal areas such as Abidjan, Accra, Lomé, Cotonou, Freetown, Monrovia, and Lagos.[32] Many of these cities are already threatened by rising coastal erosion rates, prolonged flooding, wetland depletion, heightened salinization of groundwater and soil, and an influx of different pollutants; destruction of human settlements, displacement of ports and navigational infrastructure, and the disruption of the coastal fishing and tourism.[33]

With an average coastal growth rate of up to 3.3% (2000 - 2030) and a population growth rate of about 174 million by 2060,[34] these pressures and threats are predicted to get more severe in Africa and the Gulf of Guinea in particular, more than any other part of the world, due to population increases in the low-lying coastal zones between 2000 and 2060.[35] The devastation of Sea Level Rise will rave havoc on Nigeria in terms of the number of people at risk of annual flooding.[36] This includes the unprecedented collapse of buildings linked to land subsidence.[37]

At present, increasing heat stress and variability in rainfall, including more frequent and damaging heavy rainfall events and diminishing rainfall costs Togo more than 2 percent of its Gross Domestic Product (GDP) due to coastal degradation and erosion every year; Senegal's coastal soils are too saline for cultivation and are advancing inland,

[28] See note 1

[29] See C.V. Odoeme, 'Global environmental politics and environmental law in Nigeria', (2019) 1/ 2, Nile *University Law Journal*, pp44 – 59

[30] See note 16

[31] *B. J. Nhantumbo et al* 'Sea Level Rise and Climate Change - Impacts on African Coastal Systems and Cities.' Available at *DOI: http://dx.doi.org/10.5772/intechopen.113083*

[32] See note 1

[33] M. Oppenheimer, et al 'Sea level rise and implications for low-lying islands, coasts and communities' in: P.H.O. Roberts, et al (eds) *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*. 1st ed. (Cambridge, University Press, 2019). DOI: 10.1017/9781009157964.006 [Accessed: July 23, 2023]

[34] see note 31

[35] B, Neumann et al. 'Future coastal population growth and exposure to sea-level rise and coastal flooding – A global assessment'. PLoS One. 2015; 10(3): e0118571

[36] See note 31

[37] See note 16

diminishing available arable lands; Ghana is at the verge of losing 20,000 hectares of coastal farmland to permanent inundation due to sea level rise of 30 cm; and a one-meter sea level rise would inundate 18,000 km2 of West Africa's coastline.[38]

It is predicted that the concurrency of high tide, storm surges, and extreme precipitation by 2050 would leave up to 35 percent of the coastal areas in Togo, not currently experiencing flooding - *Afloat, Kodjoviakopé, Adawlato, Ablogamé, Katanga, Gessoes, Baguida, Tropicana, Avépozo, Kpogan, Afiadégnigba, Kossi-Agbavi, Gbodjomè, Dévikèmè, Nimagnan, Agbodrafo, Kpémè, Gounoukopé, Assou-Condji, Vodougbé, Aného,* and *Sanvee-Condji* - permanently inundated.[39] A similar experience is expected in Benin since it has the same morphological features as Togo.[40]

Lose of heritage sites in the coastal areas: it is predicted that Sea Level Rise will cost 27 countries of their natural coastal heritage sites, including biocultural heritages. Of this number, eight countries and 15 sites need immediate proactive management actions to be saved and retain their high-level biodiversity, and international conservation relevance. This is essentially because of their vulnerability to Sea Level Rise[41] and their vulnerability to conflict, terrorism, poverty, invasive species, pollution,[42] including tourists' safety issues.[43]

Cultural heritages in the Gulf of Guinea are threatened by climate change the more. This includes historic buildings, archaeological sites and museum collections, seasonal festivals, sacred sites, and traditional fishing practices and foodways.[44] Rising sea level is decimating more than 30 UNESCO World Heritage slave forts and castles along Ghana's 550-km (340-mile) shoreline. Ghana's Fort Prinzenstein (once the last stop for captured Africans), the slave forts and castles, Cape Coast Castle, Elmina Castle, and Fort Christiansburg are shadows of themselves. This is denying members of the African diaspora the opportunity for pilgrimage to connect with their roots and pay homage to their ancestors.[45]

Many of the unique and outstanding cultural and bio-cultural heritage sites, with universally recognized values, are found in Africa.[46] Heritage sites have continuously served as 'living' heritage[47] and therefore are deeply interwoven with the people's identity and tradition, are essential for social well-being, safeguarding traditional knowledge and livelihoods, and constituting a prerequisite for sustainable development.[48]

Loss of heritage sites due to exposure to climate change is expected to be 100 times more than at present in Côte d'Ivoire, Benin, Togo, and South Africa. Heritage site losses due to high emissions will stand at 51% in Ghana, 30% in Sierra Leone, 25% in Libya, 21% in Mozambique, and 20% in Seychelles respectively, under high emissions.[49] However anthropogenic modifications of coastal processes are undermining the natural systems' responses to climate chance-induced shoreline changes. Decreasing sediments, coastal flooding and erosion, marine heatwaves,[50] and ocean acidification trends[51] are reducing the protection sandy beaches provide for coral reefs, seagrass,

[38] See note 1
[39] ibid

[40] Ibid

[41] J.C. Brito & M. Naia. 'Coping with sea level rise in African protected areas: Priorities for action and adaptation measures.' Bioscience. 2020;70/10, pp 924-932. see also note 31

[42] M.I. Vousdoukas et al. 'African heritage sites threatened as sea-level rise accelerates.' Nature Climate Change. 2022;12/3, pp 256-62

[43] A. Markham et al. 'World Heritage and Tourism in a Changing Climate. Nairobi, Kenya', United Nations Environment Programme and United Nations Educational, Scientific and Cultural Organization; 2016

[44] The equation 'Climate Change Threatens Africa's Cultural Heritage.' May 24, 2021, | 5:41 pm. Available at https://blog.ucsusa.org/adam-markham/climate-change-threatens-africas-cultural-heritage/

[45] N. Bhalla 'Ghana's historic slave forts are being swallowed by rising seas.' 1 November 2022. Available at ttps://www.reuters.com/business/cop/ghanas-historic-slave-forts-are-being-swallowed-by-rising-seas-2022-11-01/

[46] *Priority Africa: Sustainable Development and World Heritage* (UNESCO, 2019). See nature.com

[47] A. Ekblom, et al. 'Conservation through biocultural heritage - examples from sub-Saharan Africa.' (2019) *Land* **8**, 5.

[48] W. Ndoro & S. Chirikure, S., 'in *Managing Heritage in Africa: Who Cares?' in W.* Ndoro et al. (eds) (2018) 237–250 (Routledge).

[49] See note 42

[50] T.L. Frölicher et al, 'Marine heatwaves under global warming.' (2018) *Nature* **560**, pp 360–364.

[51] L.Q. Jiang, et al. 'Surface Ocean pH and buffer capacity: past, present and future.' (2019) **9**/18624, *Scientific Report*.

and mangroves.[52] One out of 5 coastal African heritage sites are already at risk from a 1-in-100-year ESL event, a number that is projected to almost quadruple by the end of the century.

Loss of Mangroves: climate change-induced Seal Level Rises[53] have gravely affected the quality and quantity of mangroves in West Africa and the Gulf of Guinea in particular.[54] Their depletion is denying the coastal areas the vital roles Mangrove ecosystems play in safeguarding coastal areas and their inhabitants from the perils of natural disasters such as floods, storms, and erosion[55] which includes enhancing the quality of coastal water and conserving biodiversity by providing essential habitats for coastal flora and fauna,[56] timber and fuelwood,[57] sequestering carbon and facilitating coastal accretion.[58]

Population displacement due to flooding: due to coastal flooding, climate change has forced communities and populations in the affected coastal and riverine areas of the Gulf to move away from the rampaging flood and closer to higher grounds and urban areas particularly in the Niger Delta to find new and or better opportunities for trade and survival. This movement is responsible for increased competition for scarce economic resources, arable land (wet and dry), and urban housing.

Flooding-induced population displacement is, however, a problem of interest in the Gulf of Guinea as it is not restricted to the riverine areas and coasts in the region. Intense precipitation is known to have given rise to heavy rainfalls that contributed to flooding in the Lake Chad Region, particularly the Northern part of Nigeria closer to Lake Chad in 2022. This flood caused various degrees of displacement and devastating havoc in Chad,[59] Niger,[60] Cameron, and Nigeria.[61] In Nigeria, the 2022 flood dealt a deadly blow to states like Adamawa, Borno, and Yobe destroying about 37,633 houses and displacing about 73,379 people,[62] including already displaced people in Banki Internally Displaced Peoples (IDP) camp in Bornu State.

Flooding has negatively directly affected the distribution and availability of fish stuck and fishing grounds in the Gulf of Guinea and population movement in response thereof.

Irregular rainfall patterns and rising temperature: changing patterns of rainfall affect the Gulf of Guinea in multiple ways - the lowest rainfall in the Sahel (as little as 100 mm annually) and increasing rainfall to the south, with the highest rainfall along the southern coast (up to 5,000 mm annually).[63] The variation in rainfall pattern is more pathetic in Nigeria, whose territory extends from the Gulf of Guinea into the Lake Chad Basin. In states closer to Lake Chad, irregular rainfall manifests in not having enough water (draught) to grow crops.[64]

[52] M. Paul. 'The protection of sandy shores – can we afford to ignore the contribution of seagrass?' (2018) **134**, *Maritime Pollution Bulletin, pp.* 152–159; S. Sabour et al, 'Multi-decadal shoreline change in coastal Natural World Heritage Sites – a global assessment.' (2020) **15**/104047, *Environmental Research Lett.*); M.W. Beck, et al. 'The global flood protection savings provided by coral reefs.' (2018) **9**/2186 *Nature Communication*.

[53] See note 31

[54] LM. Dupont et al, 'Vegetation change in equatorial West Africa: Time-slices for the last 150ka.' (2000) 155/1–2. *Palaeogeography Palaeoclimatology Palaeoecology, pp*:95-122

[55] P. Menéndez, et al, 'The global flood protection benefits of mangroves.' (2020), 10/1, Scientific Reports. p 4404

[56] C. Kuenzer, & V.Q. Tuan, 'Assessing the ecosystem services value of can Gio mangrove biosphere reserve: Combining earth-observation- and household survey-based analyses.' (2013) 45, *Applied Geography,* pp :167-184

[57] D. Xie et al. 'Implications of coastal conditions and sea-level rise on mangrove vulnerability: A biomorphodynamic modelling study' (2022) 127/3.*Journal of Geophysical Research: Earth Surface*, pp 1-28. Available at https://onlinelibrary.wiley.com/doi/10.1029/2021JF006301

[58] W. Van De Lageweg, & A. Slangen 'Predicting dynamic coastal Delta change in response to sea-level rise' (2017), 5/2, 24, *Journal of Marine Science and Engineering*

[59] M. Ramadane, 'Thousands battle "catastrophic" floods after Chad's heaviest rains in 30 years. (2022, September 6). Reuters, available at https://www.reuters.com/world/africa/thousands-battle-catastrophic-floods-af

[60] A. Haruna, 'Flood in Niger Republic takes grave toll on communities bordering Nigeria.' HumAngle, available at https://humanglemedia.com/flood-in-niger-republic-takesgrave-toll-on-communities-bordering-nigeria/.

[61] M. E. Kindzeka, 'Cameroon says new clashes kill at least 10, displace hundreds.' (2021) Voice of America, December 7. Available at https://www.voanews.com/a/cameroon-saysnew-clashes-kill-at-least-10-displace-hundreds-/6342586. html.

[62] Africanews. (2022, August 31). Nigeria: Floods impact half a million people, many in north-eastern region hard-hit. Available at https://www.africanews.com/2022/08/31/nigeria-floodsimpact-half-a-million-people-many-in-northeastern-regionhard-hit//.

[63] See note 1

[64] A.A. Amali, M.S. Bala, & F.A. Adeniji, 'Dying Lake Chad: Adaptive strategies to climate change and water scarcity of the

Whereas in the states closer to the Atlantic Ocean - Lagos all the way to the Niger Delta - the problem is too much water that does not allow the growth of crops.

Irregular rainfall and increased temperature in the Northern part of Nigeria, closer to Lake Chad, have affected the yield of tomatoes, onions, rice, and wheat grown by small and medium-scale farmers.[65] Similarly, irregular rainfall and increased temperature are responsible for the high rate of water evaporation in Lake Chad which led to the Lake receding at an alarming rate.[66] These trends are responsible for increased conflicts as affected communities in Nigeria, Chad, Cameroun, and Niger are compelled to move closer to the receding lake to have access to water.

Irregular rainfall and increased temperature are also responsible for the increase in longer dry seasons and draught synonymous with the Northern part of Nigeria,[67] particularly Borno, Gombe, Jigawa, Kano, Katsina, Sokoto, Yobe, and Zamfara states, and responsible for the erosion of biodiversity, the outbreak of infectious deceases, food scarcity, general decline in fishery and agricultural produce, and migration of pastoralists out of that part of Nigeria. At present, an estimated 4.8 million people in Nigeria's northeast states of Borno, Adamawa, and Yobe are at risk of severe hunger due [illegible] farming seasons. It is projected that 31.[illegible] people across Nigeria will face an acute food crisis by June 2024 in 26 states plus the Federal Capital Territory, Abuja.[68] The deteriorating food security situation due to conflict, insurgency, kidnapping, and banditry, is compounded by climate-related shocks across the country.[69]

Climate change and volatility in the Gulf of Guinea

Climate change is not the cause of volatility in the Gulf of Guinea. However, being an obvious threat magnifier[70] (or multiplier[71]) implicitly, climate change is implicated in blowing out of proportion existing threats, volatility, and conflict drivers in the region.

Climate change increases the risk of volatility and sundry security breaches.[72] In the Gulf of Guinea, climate change's impact on peace, security, community resilience, adaptation, and development are responsible for fierce competition for declining natural resources such as land, water, and fishing parts; human displacement, and migration.

The availability of SALW has increased the intensity of the contestation for natural resources. These natural recourse-based conflicts over fresh water, arable land, fishing, and pasture are well pronounced in the northern part of Nigeria closer to the Lake Chad Basin and contiguous states of Cameroon, Chad, and Niger. This is more because of the receding Lake Chad that has compelled closer contact between farmers and herders. A situation that led to cattle rustling, insurgency, and eventually kidnapping all accomplished with SALW. In those areas, communities' efforts at combating or surviving the scourge of climate change are undermined by consequential conflicts. Climate change exacerbates existential problems, and SALW used in the ensuing conflict creates additional problems that further undermines the community's adaptation and social cohesion mechanisms. Communities' resilience is lost as they are trapped in a circle of conflict.[73]

There is a sense of disorientation induced in communities by climate change. Besides the loss of biodiversity, Agro-farmers have lost the sense of direction and time for planting and predictability of

Lake Chad Basin.' (2020) 2nd World Irrigation Forum, pp 1-12.

[65] UN OCHA (2020, April 27). Lake Chad basin: Humanitarian snapshot. OCHA, available at https://reliefweb.int/sites/reliefweb.int/files/resources/20200423_LCB_humanitarian%20¬_ snapshot_en%20covid.pdf.

[66] About 90% with the last 50 years see A. Tower. 'Shrinking options: climate change, displacement, and security in the Lake Chad Basin.' (2021) in R. Bharadwaj & C. Shakya (eds). 'Loss and damage case studies from the frontline: A resource to support practice and policy.' London: IIED.

[67] P. Schmidt & R. Muggah, 'Impacts of water fluctuation in the Lake Chad Basin.' (2021) Igarapé Institute, Strategic Paper 52. Available at https://www.jstor.org/stable/ resrep29101.7.

[68] OCHR Nigeria Situation Report *Last updated: 5 Apr 2024*

[69] Ibid

[70] UNSG, (2021, December 9). Climate change 'a multiplier effect', aggravating instability, conflict, terrorism, Secretary-General Warns Security Council. Reliefweb, available at https://reliefweb.int/report/world/climate-changemultiplier-effect-aggravating-instability-conflict-terrorismsecretary.

[71] A. Day& E. Harper. 'Climate change in the Security Council obstacles, opportunities, and options.' (2023) Research Brief, The Geneva Academy of International Humanitarian Law and Human Rights

[72] Ibid

[73] J. Vivekananda, et al, 'Shoring up stability: *Addressing climate and fragility risks in the Lake Chad region*.' (2023), Berlin: Adelphi.

farm crop yields.[74] The pastoralists, in the Lake Chad Basin are losing varieties of animal species. The UN has noted that some species of animals found in the Lake Chad Basin are threatened with extinction - e.g. the Kuri Cattle, and the Sitatunga Antelope - due largely to loss of their natural habitats.[75]

As it relates to shelter, habitation, and homeland, climate change has altered the dynamics of migration - in frequency and in pattern, and in consequential conflicts. Community resilience and adaptation to climate change are no longer in the nature of switching from one source of livelihood to another. Almost all forms of livelihoods and habitations are impacted. Resilience and adaptation now require some form of movement or change of habitation, and competition, in groups or individually. While individuals may quietly migrate and compete without any visible displacement or conflict, group migration isn't and comes at a heavy cost. As flooding ravishes and desertification scares, communities are forced to seek greener pastures. Herders and farmers are forced to compete for land and water. Usually, the first arm of conflict starts with livestock destruction of farmlands as evident in the northern part of Nigeria where herders and farmers conflict cost over four thousand lives between 2016 and 2019.[76]

Individuals that have lost their livelihoods (farmlands or livestock) find their way to urban areas like Abuja, Lagos, Cotonou, Porto-Novo, Yamoussoukro, Accra, Monrovia, Freetown, Lomé to take up low-end jobs like gatemen, house helps, garage collectors, street trading, or petty trade and crimes for survival. Whereas displaced communities are in poorly kept IDP camps where they cause devastation to natural vegetation in the immediate neigbhourhood by firewood cutting, open fire, and open defecation.

Climate change causes desertification in northern Nigeria. While that affects both herders and farmers, herders are the ones quick to migrate. Herders search for greener pasture in the Middle Belt and Southern Nigeria brings up another dimension to conflict - cattle rustling. Displaced farmers, in retaliation, aggregate and mop up SALW to plunder cattle that graze their farms for meat, milk, and animal skin; and perhaps funds for insurgent groups in northern Nigeria.[77]

Mean temperatures, extreme floods, droughts, and stagnant productivity result in food insecurity. Hyped by population increases, food insecurity, and rising food demand has given rise to about 3,617 incidents of violent conflict and about 11,911 fatalities in West Africa between 2011 and 2019. The fact is that extreme weather events, stagnant productivity, and rising food demand are translating into steep increases in food insecurity.[78] As livelihoods become more fragile, and herders and farmers fight, and as governments lose sense of urgency, people are compelled to take up SALW individually and in groups to fight for food.

In Ghana, special conflicts revolve more around artisanal mines. As climate change makes it not profitable to farm, farmers are forced out of their marginal lands hit by production shocks into artisanal mining. As droughts and unpredictable rainfall patterns reduced crop yield, Ghanaian landholders in the southwestern part of the country converted their farmlands into small-scale artisanal gold mining sites as a means of adaptation. This venture into the seemingly more productive climate-neutral mining business has seen to increase in tension between migrants involved in artisanal miners and host communities. Between 2000 and 2020 there had been about 25 cases of artisanal miners and host communities conflict breakouts.[79]

Conflict brews from pressure on mining sites. As migrants arrive from within and without Ghana including Chinese, the conversion of farmlands into artisanal mining sites continues to displace farmers who now out-migrate from host communities in search of jobs. Conflict also arises from competition over land use as much as between host communities and miners.

[74] R. G. Zambo, 'Report on data collection on climate security in the Lake Chad region: Cameroon' (2022, December).

[75] See UNESCO. (2021). Biosphere and heritage of Lake Chad (BIOPALT) project. Available at https://en.unesco.org/biopalt/Landscapes; see also UNEP. (2018, February 28). See also 'The tale of a disappearing lake.' Available at https://www.unep.org/news-and-stories/story/taledisappearing-lake.

[76] United Nations, '*Preventing, mitigating and resolving transhumance-related conflicts in UN peacekeeping settings: A survey of practice*.' (2020) New York: United Nations Department of Peace Operations

[77] A. C. Okoli, 'Cows, cash and terror: How cattle rustling proceeds fuel Boko Haram insurgency in Nigeria.' (2019), *Africa Development*, 44(2), 53-76.

[78] The World Bank. The Climate Change and Conflict Nexus in West Africa: A New Approach for Operationally Relevant Vulnerability Assessments. 2022

[79] Ibid

In Côte d'Ivoire, climate risks increase migration and social tensions as well as the vulnerability of pastoralist groups and risks of farmer-herder conflicts.[80] More frequent conflicts between herders and farmers are recorded as natural resources are depleted and herders are forced to migrate southward from Mali and Burkina Faso towards coastal areas in Ghana and Côte d'Ivoire. The United Nations High Commissioner for Refugees (UNHCR) estimates have it that over 54,000 individuals arrived in Côte d'Ivoire from Burkina Faso and Mali between April 2021 and March 2024, the majority of whom are women and children.[81] Whereas 54,215 people displaced from Burkina Faso and Mali are currently registered as asylum seekers in Côte d'Ivoire.[82]

In Togo, drought takes the lead with 88.1%. It is followed by strong winds (79.2%), vegetation and forest fires, and then floods, all at a rate of 77.2%.[83] Decreasing trends in yearly precipitation on numerous climatic variables cause periodic droughts, a decrease in plant cover, an increase in evapotranspiration, and changes in surface albedo, and consequences for the water and energy balance. In southern Togo, a strong warming trend in Tmin and Tmax is debilitating crop production.[84] And rising temperatures across the Mono Basin is exacerbating the consequences of droughts[85] and the Plateaux, Maritime, and Savanes regions of Togo are more exposed to climate change and variability.[86]

Frequency and severity of flooding disasters because of human activity and changing climatic patterns[87] are presenting several health[88] dangers such as waterborne diseases and the deterioration of sanitation systems in the lower lands e.g. the lower Zio Valley. Whereas coastal erosion is ravaging the Aneho and Lome cities and is billed to increase as the average rate of erosion is close to 3 meters per year.[89] Ferocious Sea waves, erosion, rising sea levels, and strong winds are natural dangers to the Savanes, Kara, and Plateaux-Est regions of Togo.[90] Further in Togo are vector-borne diseases Malaria promoted by flood and high heat; Waterborne diseases such as diarrhea and cholera promoted by flooding; Heat and air-related illnesses such as Meningitis, cardiovascular and cerebrovascular diseases, Acute bronchitis, pneumonia, Asthma, and Bronchiolitis promoted by drought, high heat.[91]

In Sierra Leone, climate change worsens the human trafficking of the poor. Sierra Leone's poorest communities have long been prey to human traffickers. Climate change is making things worse.[92]

[80] Ibid

[81] **Northern Côte d'Ivoire Crisis Response Plan 2024. International organization for migration (IOM) available at https://crisisresponse.iom.int/response/northern-cote-divoire-crisis-response-plan-2024**

[82] UNHCR Cote D'Ivoire situation Report on asylum seekers in the North. March 2024. file:///C:/Users/Dr.%20C.V.%20Odoeme/Downloads/Dashboard%20Situation%20on%20asylum%20seekers%20in%20the%20North%2025%20March%202024%20EN.pdf

[83] M.E.P. Assiah, et al, 'Climate Change-Related Disaster Risk Events in Togo: A Systematic Review.' (2024), 13, *American Journal of Climate Change*, pp 1-13. Available at https://doi.org/10.4236/ajcc.2024.131001

[84] K. Koudahe, 'Impact of Rainfall and Temperature Variability on Crops Yields in Southern Togo.' (2016) available at https://www.researchgate.net/publication/318470886

[85] L. A. Emmanuel et al, 'Future Extremes Temperature: Trends and Changes Assessment over the Mono River Basin, Togo (West Africa).' (2019), 11, *Journal of Water Resource and Protection*, 82-98. Available at https://doi.org/10.4236/jwarp.2019.111006

[86] M. Pilo, 'Vulnerability to Climate Change Hotspots Mapping in Togo.' (2016) 2, *International Journal of Agriculture and Environmental Research*.

[87] B. Lamboni, et al, 'Extreme Rainfall and Temperature Changes Assessment on Late-Twenty-First Century over the Mono River Basin, Togo (West-Africa).' (2020) Proceedings of the International Association of Hydrological Sciences, 383, 69-78. Available at https://doi.org/10.5194/piahs-383-69-2020

[88] Seeking remedy from courts can be a harrowing task. See C.V. Odoeme, D.A. Ugwuja & C.S. Onah (2023): Medical Error Litigation in Nigeria: A Proposal for Change, Journal of Legal Medicine, DOI: 10.1080/01947648.2023.2238564

[89] World Bank 'Country/Benin/Climate-Data-Historical' (2023), available at https://climateknowledgeportal.worldbank.org/country/benin/climate-data-historical

[90] See note 83

[91] P. Andje, et al, 'Climate Change in the Grand Lomé Region of Togo: Perception of Impacts on Health Systems.' (2023) *Preprints available at* 2023090847. https://doi.org/10.20944/preprints202309.0847.v1

[92] https://www.aljazeera.com/features/2024/1/29/in-sierra-leone-climate-change-worsens-human-trafficking-of-the-poor

In Liberia, as it is with Nigeria, there is an increased risk of contamination of drinking water sources by pollutants and pathogens. Floods and storms overwhelm sewage systems, leading to the discharge of untreated sewage into waterways and contaminating drinking water with pathogens like bacteria and viruses. Redistribution of waterborne diseases due to altered habitats and life cycles of disease vectors such as mosquitoes and snails owing to changes in temperature and precipitation patterns.[93]

In Nigeria, the south suffers flooding, whereas the north suffers drought - with high temperatures inducing conflict between herders and farmers as Lake Chad withholds its supply of food and water to approximately 50 million people now in need of humanitarian assistance.[94] The local resource conflicts are sustained by weak adaptation capacities and limited alternative income-generating opportunities.[95] They are tacitly encouraged by governments' inability to control elites' exploitation of climate change-induced local grievances, poor natural resources governance, politicization of climate change adaptation, ethnic policies, divisive governance choices that increase climate change vulnerability, and violent conflict drivers.[96]

In Ghana, pressure on natural resources is responsible for local farmers' demand for the expulsion of migrant Fulani herders.

Taxation: terrorist groups such as IS[illegible]re known to impose and collect taxes from f[illegible]n, farmers, and herders in the areas they control. This taxation adds another significant line to the conflict dynamics of those areas. Insurgents impose very high tariffs and taxes on young men before they can have access to waters for fishing, thereby compelling already desperate young men to join the ranks of the insurgent groups.[97] This has a multiplier effect on conflicts in those areas, more men more weapons deployed, the more insurgent activities. It also reduces the resilience capacity of affected communities as sustained insurgency portends the collapse of community livelihood, and additional environmental degradation as conflict and climate change mutually reinforce themselves.

The SALW connect in the Gulf of Guinea

Weapons bearing groups are replete all over the Gulf of Guinea. In Nigeria the major actors include but not restricted to the Movement for the Survival of the Ogoni People (MOSOP), the Ijaw Youth Council (IYC), the Ijaw National Congress (INC), the Egbesu Boys of Africa (EBA), the Niger Delta Volunteer Force (NDVF), the Ijaw Nationality Rights Protection Organisation (INRPO) and the Ogoni Patriotic Union (OPU) in the south and Niger-Delta region in particular.[98] Others include Boko Haram and Islamic State of West Africa Province (ISWAP) in the north. The Islamic State of the Greater Sahel (ISGS) and Jama'at Nasr al-Islam wal Muslimin (JNIM) operates in Benin Republic.[99] The Islamic State Sahel (IS Sahel) operations in Benin, Togo, Ghana, and Côte d'Ivoire.[100] The broad objective of these weapons bearing groups has been to protest and demonstrate against the frosty relationship between the state and citizens. And the binding force has been poverty and hardships engendered by economic and environmental crises, and state repression.[101] The result is that their grievances and demands are constantly laid before

[93] K. T. *Papa* 'The Impacts of Climate Change on Drinking Water in Liberia.' Available at: https://www.researchgate.net/publication/379445386_Title_The_Impacts_of_Climate_Change_on_Drinking_Water_in_Liberia [accessed 16 June 2024].

[94] P. Schmidt & R. Muggah 'Climate Change and Security in West Africa,' (2021), Strategic Paper 52, Feb

[95] T. Kheira. 'Climate change and violent conflict in West Africa: assessing the evidence" (2022), SIPRI Insights on Peace and Security. No. 2022/3 February

[96] Ibid

[97] A. Haruna, 'Fishermen fleeing Lake Chad over forced conscription, taxes by ISWAP.' (2022), March 7). *HumAngle*, available at https://humanglemedia.com/fishermen-fleeing-lake-chadover-forced-conscription-taxes-by-iswap/.

[98] V. Ojakorotu, & U.O. Uzodike, 'Oil, Arms Proliferation and Conflict in the Niger Delta of Nigeria" (2006) 2, *African Journal of Conflict Resolution* (AJCR)

[99] K. de Bruijne 'Conflict in the Penta-Border Area Benin's Northern Jihad from the perspective of its neighbours.' (2022) *Clingendael Report December*

[100] A. Bernard, 'Jihadism is Spreading to the Gulf of Guinea Littoral States, and a New Approach to Countering It is Needed.' (2021) *Modern War Institute*. Available at https://mwi.westpoint.edu/jihadism-is-spreading-to-the-gulf-of-guinea-littoral-states-and-a-new-approach-to-countering-it-is-needed/; see also Hostage to violent extremism: Kidnapping in northern Benin. March 2023. Available at https://reliefweb.int/report/benin/hostage-violent-extremism-kidnapping-northern-benin.

[101] C.I. Obi, 'Oil Minority Rights Versus the Nigeria State: Conflict and Transcendence.' (2001) *Politics and Economics* 53. Leipzig: *University of Leipzig Papers on Africa*.

the affected states and the international community. However, the grievances and demands are widening whilst the government's capacity to provide effective responses to their grievances and demands is dwindling. Besides misfeasance by governments, states and citizens' reliance on natural resources is at the centre of the contestation.

Weapon is the *sine qua non* of both violent crimes and conflicts.[102] Militancy, piracy, insurgency, banditry, and jihadism share reinforcing factors that ensure their growth in the Gulf of Guinea. The factors include bad governance and inter-communal tensions, and the underlying factor is declining natural resources broadly water and arable land. Violent crimes and conflicts occur with an elevated level of disparity only in size, frequency, and severity in Benin, Cote D'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone, and Togo. Apparently, in those countries, weapons (SALW) and violent crimes and conflicts are locked in a mutually reinforcing vicious circle where violent crimes and conflicts enable SALW proliferation and SALW proliferation enables violent crimes and conflicts. Carefully concealed right within that vicious circle is climate change. While climate change is at the soul of these contestations, it is hardly identified as a frontline reason for the violent crimes and conflicts attending to the contestations. Similarly, it is not counted among the factors that drive the proliferation and use of uncontrolled and illicit SALW in the Gulf of Guinea identified[103] to include the struggle for political power, natural resources, governance, and development deficit, radicalization and violent extremism, and organized crime. Other factors include a lack of economic opportunities and social justice, porous borders, and diversion from government stock, through criminal organizations.[104]

The fact that most violent crimes and conflicts in the Gulf of Guinea occur at the community level (that may not qualify as civil war) and often amongst non-state actors and occasionally between non-state actors and national governments means that violent crimes and conflicts are executed using SALW that are awash in the region. Just like climate change, SALW do not "cause" violent crimes and conflicts, however, their circulation in conflict zones heightens the risk of higher and more deadly levels of violence, discourages dialogue, and creates a false sense of entitlement in weapons bearers which protracts conflicts.[105]

The Omnipresent and illicit flow of SALW[106] portends conflict and criminality. Climate change as a precursor for modern violent crimes and communal conflicts enables and sustains SALW flow, conflict, and criminality. This is evident in piracy's threat to global shipping, trade, and the safety of seafarers. The Gulf of Guinea, where climate change has devastated coastal fishing that people have depended on for generations, accounted for 95% of the 135 maritime kidnappings in 2020.[107] Climate change induced coastal inundation and flooding has caused severe decline in fish stock, caused some species to migrate into the high sea out of the reach of local fishermen thereby pitting local fishermen against foreign sophisticated illegal fishermen. Whereas prolonged drought and extreme weather conditions have exacerbated food insecurity and poverty on land. By way of adaptation, some former fishermen, in collaboration with militias and unemployed youth have taken to piracy and high sea kidnapping as a means of survival.[108]

As warming waters and rampant illegal fishing decimate local fisheries and leave coastal residents with little to fall back on, militants recruit impoverished youths to hijack tankers and siphon

[102] Firearms Trafficking in the Sahel. Transnational Organized Crime Threat Assessment - Sahel UNODC. 2022

[103] A. Adeniyi, The Human Cost of Uncontrolled Arms in Africa Cross-national research on seven African countries.' (2017) Oxfam Research Reports March; see also firearms trafficking in the Sahel. transnational organized crime threat assessment - Sahel UNODC. 2022; Arms availability and the situation of civilians in armed conflict: a study presented by the ICRC. ICRC publication 1999 ref. 0734

[104] See T.B. Alabo1, & A. B. Alabo, 'Small Arms and Light Weapons Proliferation: Implications for Sahel Regional Security.' (2023) 2/12, *East Asian Journal of Multidisciplinary Research* (EAJMR) 5117-5134 5117. DOI prefix: https://doi.org/10.55927/eajmr.v2i12.5350. ISSN-E: 2828-0718. available at https://journal.formosapublisher.org/index.php/eajmr

[105] See note 102

[106] **'The blue helmets' tin(y) enemy - The UN Security Council and Small Arms and Light Weapons Proliferation in Africa.' (2022), *The Nordic Africa Institute*, 11 Jan**

[107] 'Climate change may be fuelling a resurgence of piracy across Africa' (2024), Published: May 24, 2.09pm SAST. Available at https://theconversation.com/climate-change-may-be-fuelling-a-resurgence-of-piracy-across-africa-228739

[108] ibid

crude for survival in the Niger Delta.[109] In northern Nigeria, frustrated youths join terrorist groups to have access to Lake Chad and or avoid obnoxious taxes by the bandits. In Cote-d'Ivoire, the total catch fell by nearly 40% between 2003 and 2020. Small fish landings in Ghana have witnessed about 59% reduction between 1993 and 2019. It is predicted that the average haul will reduce by 50% by 2050 - in Nigeria and Ghana.[110] Having a long stretch of a coastal area, the story is the same in almost all the countries of the Gulf of Guinea where "fish means jobs."[111] It is projected that it will be worse in Nigeria where artisanal fishing supports the livelihoods of 24 million people and haul is predicted to continue to plunge another 50 percent.[112]

Generally, climate change is not sparing any Gulf of Guinea state - Nigeria is rife with extreme violence in communities in the northeast, Plateau, Nasarawa, and Benue States in the Middlebelt, and the Niger Delta in the South-South. And Senegalese citizens go for firearms when they believe they need them for self-defense.[113] However, the danger posed by the SALW handshake with climate change in the Gulf of Guinea can only made clear by a touch of theoretical analysis. The disarmament and arms control schools hold the key.

The Disarmament School[114] holds that without weapons it is impossible to wage war during conflict. In that case, the best way to avoid wars and conflict is to eliminate the weapons with which they are executed so that neither the aggressor nor the aggresse would have access to weapons. Put succinctly, total ban and non-proliferation of weapons. The Arms Control School[115] agrees with the Disarmament School's postulation only to the extent that no one has weapons, or in the alternative everyone has weapons. Its position is - to avoid wars and conflict and secure peace and stability with or without weapons - whichever serves the purpose of peace at any given time.[116] The relationship between the United States and the Union of the Soviet Socialist Republic during the Cold War, where fear of a ruinous nuclear war compelled them to cooperate to advance international peace,[117] is a great example. So, it is political tensions that cause Wars and violent crimes not just the availability of weapons. Similarly, it is political agreement that prevents (or ends) war not disarmament. Indeed, it is the absence of reasons to fight that prevents war and violent crimes/conflicts not the absence of weapons.[118]

Unfortunately, in the Gulf of Guinea, there are reasons to fight whence the violent crimes and conflicts. The violence and conflict are however exacerbated by the availability of SALW which replicates demands for SALW as climate change bites harder and hitherto unarmed communities/groups or individuals obtain SALW.[119] Meanwhile, combatants need weapons and ammunition and so do the community militias that have emerged to defend their communities from those combatants.[120] Availability of SALW encourages or intensifies violence and conflict, engenders violence by privateering nonstate security forces,[121] and exacerbates demands for

[109] ibid
[110] Ibid
[111] Hooking a new livelihood? Collapse of West Africa fisheries forces adaptation (Feb 20, 2024). Available at https://salatainstitute.harvard.edu/hooking-a-new-livelihood-collapse-of-west-africa-fisheries-forces-adaptation/
[112] ibid
[113] See note 103
[114] See Sheehan, M. "Arms control and international security" in Carey, R. & Salmon, T.C. (ed) *International Security in the Modern World* (New York, St Martin's Press, 1992).
[115] See Hedley, B. "The Traditional Approach to Arms Control Twenty Years After," in Nerlich, U. (ed)., *Soviet Power and Western Negotiating Policies*, Vol. 2 (Cambridge, MA: Ballinger, 1983). See also Trachtenberg, M. "The Past and Future of Arms Control" Daedalus, Vol. 120, No. 1, Arms Control: Thirty Years On (Winter, 1991), pp. 203-216 Published by: The MIT Press on behalf of American Academy of Arts & Sciences Stable URL: http://www.jstor.org/stable/20025364 Accessed: 19/02/2010 17:20
[116] See the detailed account in note 3.
[117] B. Hedley, 'The Traditional Approach to Arms Control Twenty Years After,' in U. Nerlich, (ed). '*Soviet Power and Western Negotiating Policies*, Vol. 2 (Cambridge, MA: Ballinger, 1983)
[118] M. Trachtenberg, 'The Past and Future of Arms Control' (1991) 120/1, Daedalus, Arms Control: Thirty Years On (Winter, 1991), pp. 203-216 Published by: The MIT Press on behalf of American Academy of Arts & Sciences Stable available at http://www.jstor.org/stable/20025364 Accessed: 19/02/2010 17:20
[119] Arms availability and the situation of civilians in armed conflict: a study presented by the ICRC, ICRC publication 1999, Ref. 0734.
[120] Firearms Trafficking in The Sahel. Transnational Organized Crime Threat Assessment - Sahel UNODC. 2022
[121] M.T. Klare, 'The Global Trade in Light Weapons and the International System in the Post-Cold War Era,' in B. Jeffrey et

SALW. This practice is the most critical issue and danger with the SALW nexus with climate change in the Gulf of Guinea. Climate change obviates and magnifies the threats, communities protest and demonstrate using SALW. SALW puts undue influence on the pattern of conflict, makes it impossible to control weapons proliferation, fuels and prolongs emergent conflicts and violence,[122] encourages resort to armed violence in preference to political solutions.[123] More so, as postulated by the Arms Control School wherever SALW are available they would be used. Put succinctly, climate change is the driving force behind the unprecedented demand for SALW in the Gulf of Guinea, which in turn posits serious security treats in the region.

Responding to climate change responsively

Many countries of the Gulf of Guinea have adaptation plans. Reducing peoples' and communities' vulnerability to climate change is the most critical part of the adaptation plans and other efforts at addressing climate change. The rationale is that some form of climate change must occur since it is a natural phenomenon - regrettably aggravated by human activities.

Responding to climate change entails adaptation and or mitigation. While adaption[124] requires adjusting or changing structures and procedures in the hope of moderating or offsetting inherent dangers or taking advantage of possible opportunities presented by changes in climate, mitigation[125] entails preventing or reducing the speed at which the climate changes. Adaptation and mitigation are however mutually inclusive responses to climate change as adaptation mechanisms help inform policies on mitigation and mitigation policies encourage adaptation.

However, adaptation and mitigation are very grave issues for developing countries. While it is given that climate changes, communities are expected to respond in ways that would enable them to adapt, mitigate net losses, or take advantage of the opportunities inherent in the changing climate.[126] The ability and potential to proffer appropriate responses that will successfully weather climate change vulnerabilities is, however, deficient in the developing countries, and states of the Gulf of Guinea region are not exempt. The capacity to adapt[127] which includes modification in behaviour, resources, and technology is critically low. Development of the needed capacity to adapt is constantly hindered by ocean acidification, the severity of heat waves, changes in local food productivity, diseases, inundation of low-lying lands by rising sea levels,[128] and the additional demands on infrastructure placed by climate-induced displacement,[129] communal and social conflicts, access to information and technology, fragility of states[130] compounded by weak institutions, income disparity,[131] and reliance on natural resources which is the worst hit by climate change. Responding to climate change responsively is more productive along these lines:

Adaptation backed by peace building: Climate change's relationship with conflicts, its most auspicious axiom, is still a subject of controversy. However, while theories on the relationship between

al (eds.) *Lethal Commerce* (Cambridge, Mass.: American Academy of Arts and Sciences, 1995).

[122] There were well over 500 active non-state armed conflict dyads in approximately 30 African countries between 1989 and 2015, which is more than 75 percent of the global total of non-state armed conflict. See the UCDP non-State Conflict Dataset. Available at <http://www.pcr.uu.se/digitalAssets/66/66314_1non-state-conflicts-by-region-1989-2014jpg.jpg>.

[123] Arms availability and the situation of civilians in armed conflict: a study presented by the ICRC, ICRC publication 1999, Ref. 0734.

[124] See Section 35, Climate Change Act 2021 (Nigeria)

[125] Ibid

[126] B. Urmilla, et al (eds.) 'Climate change and conflict: Conflict-sensitive adaptation to climate change in Africa' (2014) in A. Carius & D. Tänzler (eds) *Climate Diplomacy Serie*s

[127] W.N. Adger, et al 'Assessment of adaptation practices, options, constraints, and capacity' in M.L. Parry, et al (eds) '*Climate Change: Impacts, adaptation, and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate (IPCC).* Cambridge: Cambridge University Press, (2007).

[128] Ibid

[129] R. McLeman & B. Smit B 'Climate change, migration and security, (2004), *Canadian Security Intelligence Service, Commentary No. 86.* Accessed 20 March 2012. Available at http://www.csisscrs.gc.ca/en/publications/commentary/com86.asp

[130] O. Brown, A. Hammilla & R. McLeman 'Climate change as the "new" security threat: Implications for Africa, (R (2007), 83, *International Affairs, pp* 1141–1154.

[131] H. Osbahr, et al, 'Effective livelihood adaptation to climate change disturbance: Scale dimensions of practice in Mozambique.' (2008) 39, *Geoforum, pp* 1951–1964.

climate change and conflict evolve, it is practical that climate change aggravates conflicts and, in some places, initiates the same. The point here is not to join the contestations of theories but to highlight that adaptation and peace building work together in responding to conflicts induced by climate change effectively. As evident in the Lake Chad Region and the Sahel, climate change and conflict are co-travellers in their mission of redistribution of costs, opportunities, and benefits. Dealing with one has a direct effect on the other whence adaptation and peace building.

Peace building as a correlate of adaptation to climate change entails instructing communities on changes in behavour towards ownership and management of shared resources such as water bodies, farmlands, and cohabitation, all of which are factors of community resilience. Instructing communities on how to use water in water bodies (rivers, dams, and lakes) that have shrunken in size, rivers, and seas that overflow, shelter in the face of drought and desertification, sharing spaces in cases of displacement in no small ways eliminates or reduces violent crimes, communal and social and conflicts when climate change calls. Peace building and adaptation derive equal benefits from dialogues and social engagements involving affected communities conducted with inclusivity and transparency, and perhaps by a state authority.

Access to information: Up-to-date knowledge on adaptation, coping strategies, (including weather forecasts) and mitigation are critical to effective responses to climate change. This helps understand the context, experience, and how people and communities respond to climate change with the view to assessing their practicability, suitability, sustainability, rationale, results, and alternatives long before adopting similar practices. Incidentally, not many studies have their focus on climate change adaptation in the Gulf of Guinea compared to similar studies in the Sahel and Lake Chad Regions. Therefore, Data is not readily available to understand community responses to climate change in terms of how people cope as distinct from how people adapt to climate change - a distinction necessary for climate change mitigation policy planning. The effect is that people and communities in the Gulf of Guinea region are just existing, living by the day, hoping for divine intervention, since governments are weak, and climate change is politicized.

Access technology: the truth is that efforts at engaging technology to address climate change in the Gulf of Guinea are not impressive. For example, Nigeria just enacted a dedicated Climate Change Law in 2021 and inaugurated the implementation arm in 2024. The danger is that climate change has no uniform effect on all communities in which case there is a need, even when technology is available, to have autochthonous or indigenous technology or develop the capacity to adapt or apply received technologies locally by local experts. Unfortunately, local experts are in short supply, local capacity for monitoring climate change is not being developed adequately, and political responses are highest at political rallies or conference tables around the world. Even traditional institutions and indigenous adaptation knowledge and strategies are not explored or rather being ignored while reverence is given to external expertise which serves little purpose.

Regional cooperation: cross border impact of climate change such as SALW proliferation, displacement, migration, struggle for water, fishing lanes, grazing routes, and arable land often spill over across borders whence regional cooperation. This may include data sharing, border control, residence rights, refugee management, and crime control.

Having a lot in common, regional cooperation in the Gulf of Guinea countries may serve a better purpose if existing infrastructure are such as roads, dams, or seawall construction modified to respond to changing climatic conditions. Traditional agricultural practices such as rainfed agriculture and open grazing should give way to less climate change-resistant practices such as intercropping, drought-resistant fodder crops, changes in tillage practices, changes in cropping periods, etc., ranching and an intentional co-operation between farmers and herders to share resources and reduce violent crimes and conflicts.[132] Voluntary, government-managed migration may be considered as an option to displacement.

Migration: many persons and communities have moved from their original places of residence and community to urban and semi-urban areas, IDP Camps, or simply fused with other existing communities considered safe. In the northern part of Nigeria, such movements have seen communities moving closer to occupy the additional shores

[132] See Stated in B. Urmilla, B. Salomé (eds.) 'Climate change and conflict: Conflict-sensitive adaptation to climate change in Africa' (2014) in Alexander Carius & Dennis Tänzler (eds) *Climate Diplomacy Serries*

created by the receding Lake Chad.[133] In the southern part, the movement has been away from the Atlantic to higher grounds. Many of such movements are seasonal to maximize available opportunities left in the affected areas.

Peacebuilding: surprisingly climate change has a positive attribute. Communities ravaged by climate change should consider exploring the value of negotiated peace. A 2020 British Council report[134] wrote about a negotiated truce between the farmers and herders in Guyuk Local Government Area (LGA) of Adamawa State Nigeria. An NGO (Agaji Unity Foundation) facilitated a peace agreement in June 2020 that led to the harmonious leaving of herders and farmers in that LGA.

Reversal of dangerous adaptation strategies: As climate change fritters communities' resilience and capacity to adapt, many strange adaptation strategies emerged, including youth "voluntarily" joining armed groups. In the coastal areas of the Gulf of Guinea, particularly the Niger Delta, disgruntled youths "voluntarily" join Pirates, Kidnappers, and other militarized gangs to be able to fend for themselves. In the Lake Chad Basin where the *Boko Haram* terrorist group had blocked the community's access to some parts of the Lake, from where the communities earn their livelihood from subsistent farming, youths are caught in between the devil and the deep blue sea. Already limited in access to markets, capital, and credit,[135] and education they find no better option than to join *Boko Haram or ISWAP* to be able to have access to the Lake for survival - a perfect example of climate change's handshake with SALW.[136]

Weapons Control: criminalizing weapons ownership and use appears not to have served much use and is ineffective in the Gulf of Guinea. Enactments such as the Decree No. 61-39 PR/MI of 7th February 1961 and Law No. 2019-7 of 14th January 2020 (Benin); Firearms and Ammunition Law 1998 (Cote D'Ivoire); Arms and Ammunition Act 1962 (Ghana);[137] Firearm and Ammunition Control Act 11th July 2016 (Liberia); Firearms Act of 1956 (Nigeria);[138] Arms and Ammunition Act, 2012 (Sierra Leone); 19th April 1995 Decree No. 62, Law No. 59 -08 of 6th January 1959 relating to the regime of firearms, and Decree No. 62-2 of 8th January 1962 regulating imports, possession, transfer; Decree no. 2001 – 098 19th March 2001establishing NATCOM (Togo); and the Arms Trade Treaty 2013[139] have not helped much in controlling the proliferation of SALW in the Gulf of Guinea. The weakness is less in the laws and their enforcement than it is with the fact of the presence of reasons to use SALW. So, an effective weapons control mechanism may go beyond the purview of the disarmament and arms control school to citizens' engagement and responsive governance aimed at reducing the reasons to fight and improving community resilience and peace building.

Conclusion

It is obvious that climate change is the driving force behind the unprecedented demand for SALW in the Gulf of Guinea. Whereas SALW's interface with climate change is responsible for many serious security treats and breaches that are devastating the Gulf of Guinea region. In responding to climate change's impact on coastal flooding, climate-sensitive diseases, increasing temperatures, shifting rainfall patterns, communal conflict, declining natural resources, and loss of biodiversity, populations are compelled to seek, away from the rampaging flood or draught, new and or better opportunities for trade and survival which further exposes them to violent crimes and conflicts and sundry unhealthy realities of climate change shock.

The interface of SALW with climate change has exacerbated competition for scarce economic resources, arable land (wet and dry), and housing. Youths have been particularly impacted by the

[133] A.L. Germer, & K. N. Njoya 'Adapting Livestock Herding in Cameroon to Climate Change.' (2022) December 15. *World Bank Blog*, available at https://blogs.worldbank.org/africacan/adapting-livestock-herding-cameroon-climatechange.

[134] British Council, (2020, June). Farmer and herder groups sign peace pact. https://www.justice-security.ng/farmerand-herder-groups-sign-peace-pact-guyuk-adamawastate.

[135] N. Dabi, & A. Mathieu, 'Supporting livelihoods in the Lake Chad basin: *Ways forward for conflict-affected communities in Nigeria, Niger and Chad*.' (2018). *Oxford: Oxfam International*.

[136] UNDP. (2023). Journey to extremism in Africa: Pathways to recruitment and disengagement. https://www.undp.org/publications/journey-extremismafrica-pathways-recruitment-and-disengagement.

[137] This Act repealed the Arms and Ammunition Ordinance (Chapter 253). It was first amended by Arms and Ammunition Decree 1972, then in 1983. The 1996 amendment was essentially to revise fees and penalties. It also repealed the Arms and Ammunition (Amendment) Law 1983.

[138] Chapter F28 LFN 2004.

[139] Adopted by the UN General Assembly on 2nd April 2013 after seven years of intense discussions and negotiation.

climate change and SALW interface. Many youths have joined Boko Haram, MOSOP, IYC, INC, EBA, NDVF, INRPO, OPU, ISGS, JNIM, IS Sahel, ISWAP, Pirates, Kidnappers, and other militarized gangs to be able to fend for themselves or avoid obnoxious taxes imposed by on them. That has an overbearing impact on peace, security, community resilience, adaptation, and development as SALW increases the intensity of the contestation for natural resources.

To improve individual and community's responses and avoid or reduce violent crimes and conflicts inherent in the climate change and SALW mix and given that climate change (and other environmental crisis) is strongly implicated in the SALW use that conflagrates the already bad situation in the Gulf of Guinea, there is an urgent need to address all the identified factors. This entails infusing peacebuilding in the country's adaptation plans; making up-to-date information relating to climate change adaptation (coping strategies, mitigation, and weather forecasts) readily available; adopting and engaging easy-to-deploy climate change adaptation technologies and deploying early warning and early response mechanisms; as well as developing indigenous and traditional adaptation technologies and local expertise.

Enhanced regional cooperation with the view to addressing the cross-border impact of climate change such as weapons proliferation, displacement, migration, and struggle for water, fishing lanes, grazing routes, and arable land is strongly recommended. Governments in the Gulf of Guinea Region should consider developing a government-managed climate change displacement-specific migration plan that provides for purpose-built IDP Camps and shared water bodies management structures like in the receding Lake Chad.

An attempt should be made to reverse all dangerous adaptation strategies such as youth "voluntarily" joining the ranks of armed groups and other criminal ventures, and women supplying essentials to armed groups.

Whereas criminalizing weapons ownership and use is the standard procedure for weapons control. In the Gulf of Guinea where laws and their enforcement are lax, governments should consider less punitive weapons control mechanisms and engage citizens on the need to eschew violence in all forms of agitations and provide responsive governance aimed at reducing the reasons to fight which ultimately improves community resilience and peacebuilding.

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