CENTRO DE ESTUDOS SOBRE ÁFRICA E DESENVOLVIMENTO
ISEG - Universidade de Lisboa

Working Paper

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FRAGILITIES AND SHOCKS EFFECTS ON HOUSEHOLDS AND COMMUNITIES IN WEST AFRICA

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ABSTRACT

Shocks are drivers of fragility yet most works on fragility in Africa use the tag "fragile state(s)" with less focus on the drivers of fragility in its institutions, states, and economies. Shocks are cardinal to the entrenchment or stability of any system. The Covid-19 pandemic revealed how fragile the world is including the "developed" or "advanced" systems. Today, households, businesses, and communities in most parts of Sub-Saharan Africa suffer the effects of a triple whammy (climate change, the pandemic and Russia/Ukraine War) including effects of history and an unfavourable global system all of which leaves them in hunger, poverty and vulnerable conditions. This study used secondary sources to revisit the effects of these shocks on households, and communities in West Africa through the lens of common resources. The recent shocks effects prevalent in all these countries is higher than reported and would affect West Africa´s growing population in the foreseeable future with the absence of safety nets or effective interventions. The absence of shocks preparation in the subregion is not sustainable and adds up to the sustenance of the revolving circle of fragility in the subregion.

Keywords Africa, climate change, community, fragility, household, shock, and Pandemic.

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Introduction

Since the 1990s fragilities have often been associated with developing countries especially African states where history and institutional failures have often been blamed for laying the foundation for state fragility. This paper does not exonerate historical antecedents and institutional failures from the causes of fragility in Africa but considers them foundational factors that spur fragility. The argument of this paper is that contemporary factors drive fragility faster than foundational. Like what may spur a political uprising or market inflation most likely are contemporary factors not foundational.

Although the idea behind state fragility was fuelled by the fall of the Soviet Union when suddenly the threat of global destruction or regional disruption seemed to have ended (Ziaja, Grävingholt & Kreibaum, 2019). Often fragilities are referenced to the state or political system in an attempt to "bringing the state back in" (Evans, 1985; Ziaja, et al., 2019) in an age of "authority, capacity and legitimacy" where the state is seen as a system that propagates war, ensures economic prosperity yet conforms to a civil society. The emphasis is usually on the economic and political system and their associate entities especially institutions from historic to contemporary times.

Fragile as the human society, systems and the entire global factors are, the perception of "perfect economy", "developed country", "advanced systems", or "organized society" evoke the notion of stability and perfection with minimal failures. It equally evokes the sentiment of capability to handle any situation, meet the needs of its population, foresee danger and prevent or solve it timely. Weaknesses and susceptibility are not commonly associated with it. The pandemic reminded us how fragile all these are. Despite the frail nature of the human systems, communities and economies are often associated with developing countries, regions, and economies. However, sufficient focus is not channelled on the drivers of the fragility in Sub-Saharan Africa asides the historical and political elements. At the micro level of the economy where this study is focused on especially firms, households and communities, there is need to consider

today´s drivers of fragility to understand the sustainability of Africa´s micro society (households and Communities) and the entire population.

Little attention is paid to the fragility of the climate, public health, global order or economic systems including markets, global production and supply chain. The effects of climate change, the Covid-19 pandemic and the Russian war in Ukraine exposed how fragile all these are. The global economic system, the natural order vis-à-vis climate and our health systems are vulnerable and in fact, we live in a vulnerable world where the idea of a perfect market, perfect world, and so on are mere illusionary. Shocks (which are sudden or surprising event, experience or upsetting) incidents that affects virtually all aspects of human lives or economy or one aspect that has effect directly or indirectly on others and influences how resilient or fragile others become is a major driver of fragility.

The discussion of fragility in respect to developing countries like African countries would remain incomplete without a consideration of these other factors that continue to weaken the state, society and economy. Whether it affects a part or the whole of the institution, economy, society or state, shocks are cardinal determinant among others of what the economic system, institutions, society and state becomes. This paper therefore attempts to look at contemporary shocks that shape the modern West African reality and their effects in the foreseeable future. Although, the impact level varies and could depend on proximity to the margins, the drivers or the event itself. West Africa´s exposure to health hazards like the Ebola epidemic, the Covid-19 pandemic, climate change (which affects its ability to grow water demanding crops), supply chain crisis and the Food Chain vis-à-vis the Russian War are factors that affects how each of these events affects each of its countries, communities, businesses and households.

Inflation has been uncontrolled in some parts of Africa despite rising unemployment and inequality. Communities, businesses, households and people at the margins with poorer accessibility and affordability are more at the receiving end. It is not easy to measure or exactly ascertain the level of impact that the pandemic, the food shortages or rising costs due to the Russian war in Ukraine or climate change has on households, businesses and communities in a country let alone a region. This paper therefore

discusses these as shocks from secondary sources to build on what has been studied. But what are shocks? shocks are "external short-term deviations from long-term trends, deviations that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, or safety, or their ability to withstand future shocks" (Zseleczky and Yosef, 2014). Due to their socioeconomic impacts, shocks serve as drivers of poverty, inequality, food and water insecurity in communities. The impact on individuals, households and businesses at the margins and the effects of this triple whammy added to pre-existing conflicts especially communal and terrorist attacks are the focal point of this study.

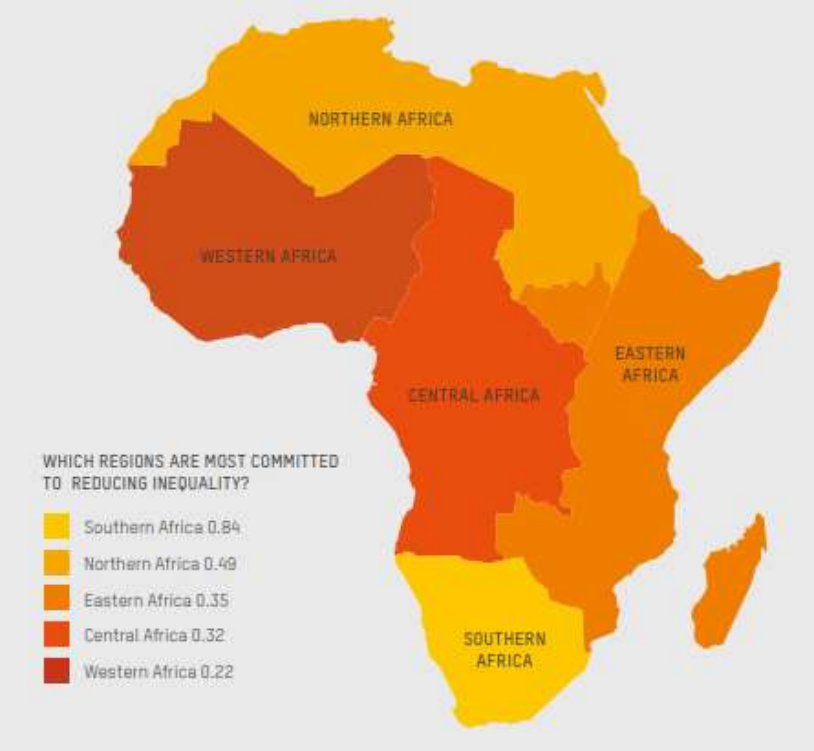

Figure 8: The African Regions. Source: Oxfam (2021)

The African continent is divided into geographical subregions of Central, East, West, North and South. There are further divisions like the Maghreb subregion comprising of Western Sahara, Morocco, Algeria, Tunisia and recently, Mauritania. The horn of Africa comprising of countries (Sudan, Eritrea, Ethiopia, Djibouti, and Somalia –SEEDS, my abbreviation) whose territory forms a horn-like curve on the northeast of Africa. By extension, some other East African countries are included in this group and they are Kenya, Uganda, Rwanda, Burundi and Madagascar (MR.BUK, my abbreviation). There is the Sub-Saharan Africa which refers to countries located in the south of the Sahara Desert. All but eight (Algeria, Djibouti, Egypt, Libya, Morocco, Somalia, Sudan and Tunisia) countries in Africa belong to this group. Africa today has 54 independent countries with the push for new countries from some of the countries like Western Sahara which makes it 55. Some other agitations may lead to the birth of more countries in the continent in the future.

Northern Africa is made up of 7 countries, Algeria, Egypt, Libya, Morocco, Tunisia, Sudan and Western Sahara which are close to the Mediterranean Sea. Southern Africa with the has 9 countries which are Angola, Botswana, Eswatini (Swaziland), Lesotho, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. However, 5 of these countries (Botsawana, Eswatini, Lesotho, Namibia and South Africa) are often regarded as southern African. Eastern Africa comprises of 17 countries namely, Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Reunion Island, Rwanda, Seychelles, Somalia, South Sudan, Tanzania, and Uganda. Angola, Mozambique, Zambia and Zimbabwe are sometimes associated with East Africa. West Africa has 16, Benin, Burkina Faso, Cabo Verde, Cotê Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sierre Leone, Senegal and Togo. And Central Africa has 7 namely, Cameroun, Central African Republic, Chad, Congo Brazaville, Congo Democratic Republic, Equitorial Guinea, Gabon, São Tome e Príncipe.

Considering the geographical location of the African continent, it is naturally endowed yet exposed to climate change impacts. All parts of the continent are exposed to climate change effects with a variation in the degree of exposure. More countries in north, west and east of the continent are exposed to more and more droughts, cyclones, floods,

with the attendant impact on nature, the environment, resources, humans and the economy. These impacts affect agricultural resources, water quality, the environment, institutions and the functioning of the society and economy. It goes on to affect the availability of good food, accessibility of nutritious food for healthy living, good drinking water, good shelter, the psychology for a healthy living, the economy to enhance effective transactions and other resources in the environment.

The dysfunctional nature of economies in Africa at the micro to macro levels which has been blamed on a number of factors including fragilities has paid little attention to the effects of shocks as drivers of fragility in the continent. Shocks like climate change effects and responses to them, the pandemic or other epidemics recorded in the region and their effects, conflicts, terrorism, and wars which regularly occur within and outside the continent. The boomerang effects of global events like the war in Ukraine, the pandemic and others. Their impacts on households and communities are instant drivers of fragility household, community and state economies in Africa. The economy of households, businesses, communities, countries and the region suffer it more and the level of access to opportunities, resources or wealth determines the ability of each to survive the tide. This reality explains the reason for increasing inequality in most parts of the region.

The absence of a possible panacea at the micro level of society initiated by the state or market and the burden of unjust public policies, political instability, unfair global economic system, corrupt practices and the greed of capitalists continue to exacerbate the economic crisis of households and communities and makes the region more and more fragile. West Africa is no exception. Hence, it has Nigeria as the poverty capital of the world (Yebou et al, 2022; Omeje et al., 2022). Though India (which seems to constantly compete for the position with Nigeria) has overtaken Nigeria in that position (Mohammed, et al., 2022; Nnorom, 2022). Households and communities in Africa yearn for welfare economics more than growth economics (which has not helped salvage the region since decades of implementing policies sequel to the Washington Consensus and subsequent market led policy initiatives), for humanitarianism more than capitalism and for altruistic more than aggrandisement efforts. The current impact of

climate change and shocks needs to be responded to with robust traditional adaptive methods, improved sustainable value chain development and the technological advancement of the earth´s poorest continent with a focus on household level and community-based interventions. There is need for novel economic assessment at community levels within national economies and comparison with other community economies around the world rather than just GDP of national economies.

The woes of household and community economies are responsible for the low literacy level in the continent today. Africa's literacy rate is among the world's lowest (Beegle, et al., 2016). In a system where the educated are not gainfully employed, the educational system is struggling to function rather than to develop with their contemporaries in the world. Infrastructure is hardly sufficient for the population like good schools which makes private schools much more in number in some of the countries with some charging exorbitant prices. This has resulted in more out of school kids yet those in school are unable to get the quality of education they deserve. Many communities especially in rural, suburban, and urban settlements do not have good and sufficient classrooms for children. There are hardly considerations to improve school systems and infrastructure for the growing population. Basic education is scarcely available to provide for each child their universal right to basic education. In 2022, the United Nations Education Scientific and Cultural Organization (UNESCO) reported that 98million African youth are out of school and Nigeria has about 20.2 million which is about a tenth of the global population (244 million) of out of school youth aged 6 – 8 (UNESCO, 2022).

The chances of Africans securing good employment outside the shores of Africa are usually slim. A retrogression in the accessibility of quality education for the African child further darkens the future of the African child. The current economic crunch experienced by individuals, households, businesses and communities in the continent is not sustainable and actions are needed to begin else much more problems than already known would be witnessed. There is a need to provide the future of the black race with the knowledge and resources needed to live healthy lives before narrow-minded individuals and groups take advantage of them. Like they have already done in

some parts of Africa where extreme thoughts have been sown in the minds of young people thereby making them agents of destruction evident in child soldiers, terrorists, suicide bombers and crime networks. Functional libraries are scarce to find in cities, yet many praying centres and religious houses are erected in more settlements including extremist cells. There is a need for a sustainable educational system in many communities in Africa.

1. CLIMATE OF THE AREA OF STUDY

West Africa is surrounded by the Atlantic Ocean and its tributaries at its lower and western end regions. The Sahara Desert penetrates most of its countries from its upper or northern end. Climatic conditions of most West African countries are relatively high all through the year. The region has two main air masses influenced by the Intertropical Convergence Zone (ITCZ)'s north to south movement throughout the year. The high air pressure over the Sahara Desert spurs dusty Harmattan winds through most parts of West Africa from November to February. The moist equatorial air masses from the Atlantic Ocean causes annual monsoon rains for the rest part of the year (Nicholson, 2013; Eros USGS, 2022).

As a result of influence of the Sahara Desert in the north of West Africa and the Atlantic Ocean in the south, there is variation in seasons. The south, around the Gulf of Guinea has two seasons for rainfall and dry seasons. Rainfall usually occurs from March to June and August to November while dry season occur in July and December to February. The northern part, the Sahel area experiences one dry and rainy season, which are October to June and July to September respectively (Obahoundje & Diedhiou, 2022). This explains why droughts are common in many parts of the continent. What is drought? It is a period of dry climatic condition caused by abnormal precipitation deficiency for a long time that adversely affect vegetation, animals and/or people.

West Africa´s surface temperature has been rising since the 1970s with a range of 0.5ºC in 1970 to 0.8ºC in 2010 and since the last 20 years, the rise has been more intense.

Between 1961 and 2000, a decline has been recorded in the amount of cold days and nights and an increase in the amount of warmer days and nights. Over the Gulf of Guinea´s coastal areas, diurnal and nocturnal heatwaves have increased since the 1950s and has become more severe in the 1980s (Riede, *et al.*, 2016; Obahoundje & Diedhiou, 2022). The impact in the region is far reaching and is projected to exceed global temperatures in the coming years yet enduring longer. This would result in higher energy demand, reservoir water evaporating more thereby causing water scarcity for hydropower generation and reduced plant performance and yield if nothing is done to synchronize hydroclimate services to manage the system.

Figure 9: Map of Africa showing West Africa. Source: 197 Travel Stamps, https://197travelstamps.com/list-of-west-african-countries-and-capitals/

2. DEMOGRAPHY OF WEST AFRICA

Three West African Countries, Burkina Faso, Mali and Niger are landlocked. They depend on their neighbours for imports. The current population of West Africa is estimated to be 425 million which is equivalent to 5.16% of the global population. The UN population forecast expects the region's population to grow. Most of its countries are among the countries with the world´s youngest population and high population growth propensity. More than half of the global population growth till 2050 is expected to come from Africa including West Africa. Nigeria is an important driving force for the region's population strength. Social, economic and political events certainly affect the health and quality of life of this population.

Interestingly, the sub-region is bordered by the Atlantic Ocean at the south and west, the Sahara Desert and the territories of north African (Maghreb) countries (precisely, Algeria, Libya and Western Sahara) at the north and Central Africa (precisely, Chad) at the east. The subregion has some major water bodies namely, the Niger river, the Senegal river, Gambia river, the Lake Chad, the Sanaga river, the Volta river, the Benue river, and their tributaries. Each of these connects one country to another before pouring into the Atlantic through the Gulf of Guinea, Bight of Biafra or Equatorial forest. These waterbodies provide the water and agricultural needs of households and communities within their paths. Each of these waterbodies have had their share of climate change impact from shrinking to swelling after excessive rainfalls.

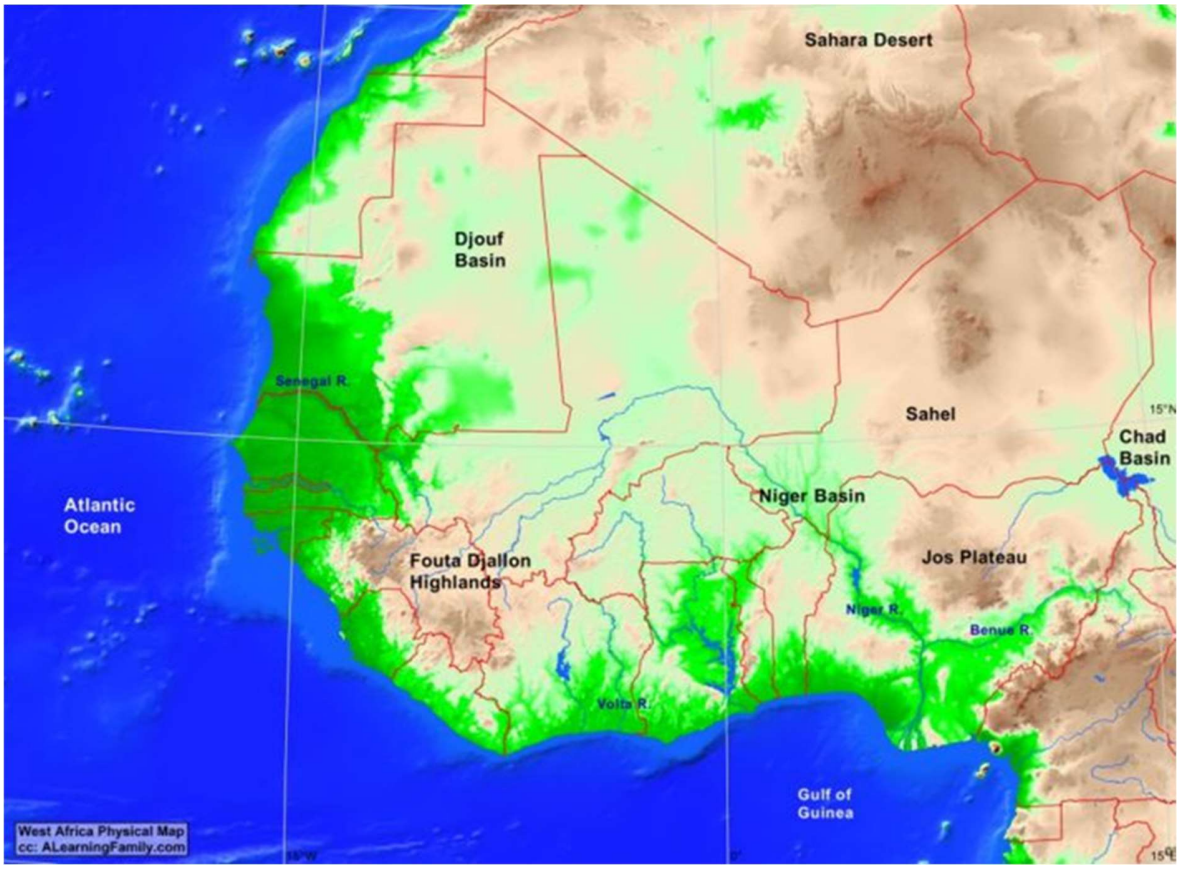

Figure 10: A Physical Map of West Africa. Source: Creative Commons: A Learning Family.

Prominent among the shrinking waterbodies in the subregion is the Lake Chad which is a modern testament of climate change impact that has left several households and communities (in the countries) linked directly or indirectly to it in suffering. It has contributed to the insecurity in the subregion as thousands of households and many communities who depended on it for their irrigation farming, fishing or animal farming have had to move inwards in search of a better livelihood for themselves, their household and animals. Thereby increasing farmers´ – herders' conflict that has left many dead, communities burnt down, and properties destroyed.

Figure 11: West Africa's major water bodies and their routes. Source: Updated from map courtesy of University of Texas Libraries, http://www.lib.utexas.edu/maps/africa/txu-oclc-238859671-africa_pol_2008.jpg.

3. WEST AFRICA´S MAJOR WATER BODY AND ITS ROUTES

The Southern to the western ends of the West African subregion is surrounded by the Atlantic Ocean. The flowing waterbodies from the hinterlands flow into the Atlantic through the Gulf of Guinea, Bight of Biafra, Bight of Benin in the West African end and Bight of Bonny in the Central African end. West Africa´s biggest river and the third in Africa (after the Nile and Congo), the Niger River spirals its 4,200 km^2 (600 miles) journey from the eastern end of the Fouta Djallon in the Guinea highlands that is 240km (150miles) of the Atlantic Ocean (Mabogunje, 1965). The Greeks were said to have

christened it, Niger which ushered it a new identity. It has other names along its routes. It travels through Mali, through the Niger Bend where it goes through the inland Delta to the southern end of the Sahara Desert and continues south through Niger and Benin Republic´s border to Nigeria and goes to converge with the Benue River in Lokoja. It further moves through Onitsha to the Niger Delta region where it forms a massive delta to the Gulf of Guinea from where it empties into the Atlantic Ocean.

Professor Akinlawon Mabogunje (ibid) explains that the Niger disperses and links with its tributaries and other rivers along its route. He further explains that after its 850metres (2800 ft) above sea level rise from a deep gulley, it travels north over its initial 160km (100miles) then flows northeast to link its upper tributaries – the Mafou, the Niandan, the Milo, and the Sankarani on the right and the Tinkisso on the left – to Mali beneath Bamako. The upper river terminates at the Sotuba. The Niger then flows low in a 300metres (1,000ft) in nearly 60km (40miles) into a tectonic subsidence formed valley. The flow along this axis gets plunged by the flow of reserved water from the Markala Dam situated 240km (150miles) of of Sotuba Dam near Sansanding in northcentral Mali. It flows east and north-eastwards at Koulikoro from where its bed gets relatively free of obstacles for nearly 1,600km (1000miles).

River Bani, its biggest right-side tributary converges with it at Mopti before it joins a left-side area of lakes, creeks and backwaters usually referred to as the Niger´s "internal Delta". Lake Faguibine is the biggest of these lakes. It is about 120km (75miles) long, 25km (15miles) wide and over 50meters (160ft) deep in some parts. These lakes are linked to the river by channels that modify their flow route seasonally and many of the lakes join a gross wave at high water. At Kabara where the port of Timbuktu is located, these lakes, creeks and backwaters end their course. At Timbuktu, it flows east passing its most northern point at around 400km (250miles) downstream from Timbuktu through a narrow gorge to Gao across a floodplain 5-10km (3-6miles) wide where it makes its most northly bend through the Sahara southern fringe. In its middle course as far downstream as Ansongo about 1,770km (1,100mile) altogether making some slow and fast flow till it becomes more navigable at Labbezanga, a small porto village in Mali from where it flows into Niger downstream into Jebba in Nigeria. It is joined by a

key tributary that make up around a fourth of its annual discharge, River Kaduna in about 110km (70miles) from Jebba.

The Rivers Niger-Kaduna convergence occurs at about 40km (25miles) from Lokoja where it heads south for a confluence with its biggest tributary, River Benue. This confluence doubles the volume of its annual discharge. At this point the Niger occupies ¾ of a mile while the Benue over a mile and they flow together like a lake covering over 2miles with a few islands and sandbanks on its course to Idah from where it flows in a limited basin surrounded by hills and some sandstone cliffs up to 45metres (150feet) high to Onitsha, its third largest riverine town after Bamako and Niamey. It flows through towns to Aboh where it parts into branches before getting to the Gulf of Guinea forming Africa´s biggest Delta in the 240km (150miles) stretch Niger delta region that spread along a 320km (200miles) coast. Around the delta, it splits into a network of channels to produce the Nun River and from its west to east, the Forcados, the Brass, the Sambreiro and the Bonny. These rivers have sandbars clogging their exit into to the mangrove swamps that leads it into the Atlantic.

4. CLIMATE CHANGE, PANDEMIC, RUSSIAN-UKRAINE WAR AND COUNTRIES OF WEST AFRICA

West Africa as a subregion of the African continent is in the southern part of the Sahara Desert. It has the Sahara Desert traversing many of its countries. This naturally exposes the subregion to harsh climatic conditions. Politically, it could be considered a region given the more restricted definition of regions as an alliance or summit involving two or more states. The subregion equally has the Atlantic Ocean at its coast with many of its countries at its banks or having its tributaries traversing inland within its territory. The ecology of the subregion can better be understood from these two natural realities as they define and shape their environment. The subregion has warmed from 1.1°C in the 1950s from an estimated 2.1°C in 1850, pre-industrial time. Today, its temperature rises by 1.4°C in April before the monsoon rains when it usually peaks and stabilizing to an all year-round average of 1.1°C. The highest warming occurs in the northern Sahel

and Sahara yet the subregion has some of the lowest Green House Gas – GHG – emission per capital in the world like Guinea Bissau – 0.18 and Cabo Verde – 0.19 (Crippa *et al.*, 2021). On the contrary, the fastest growing economies of China and India are the *pollution havens* (Liu *et al.*, 2019; Lai, *et al.* 2022).

The sixteen (16) countries of West Africa are Benin, Burkina Faso, Cape Verde, Côte D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo. In 1999, Mauritania, one of the founding members announced its decision to pull out of the Economic Community of West African States (ECOWAS) by December, 2000 because of the regional bloc's push for multiparty system in all of its member states and the long-standing principle of free movement within the region. It finally pulled out by December 2000 and concentrated on its membership of the Arab Maghreb States. The regional body now has 15-member countries. Nine (9) of these Burkina Faso, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Sierra Leone, Sudan, and Togo are low-income countries. The remaining six (6), Benin, Cape Verde, Côte D'Ivoire, Ghana, Nigeria, and Senegal are lower-middle income countries. Ten West African countries – Benin, Burkina Faso, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Senegal and Togo – fall into the least developed countries list (UN DESA, 2022). These are struggling countries with fragile economies and are susceptible to external shocks since they are not self-sufficient but depend on others a lot.

5. BRIEF COUNTRY BY COUNTRY ANALYSIS OF SHOCKS AS DRIVER OF FRAGILITY IN WEST AFRICA

Most works on fragility and state failure in Africa consider history, institutions, corruption, politics and economy as factors driving fragility and poverty in the continent (Acemoglu & Robinson, 2010; 2012). Historical antecedents of these countries would aid an understanding of the political, sectarian and internal economic dynamics that are outplayed in the day to day running of the economic and political systems. The global economic order cannot be totally isolated from Africa´s fragility and the burden

of suffering for the consequences of anthropic activities of industrialized and developed economies. The impact of epidemics or pandemics and anthropogenic activities, global political and military actions and decisions, artificial commodity price fluctuations, and a whole lots of realities that are passed on to the developing world cannot also be completely isolated from the shocks experienced in these developing countries. These serve as drivers of their fragilities. A brief exploration of the impact of climate change and other shocks on these west African countries would aid a better understanding of their impacts on fragility in West Africa.

Benin

Formerly Dahomey, the French speaking country which borders Nigeria in the east, Burkina Faso and Niger in the north, Togo in the west and the Gulf of Guinea in the south where its famous Cotonou port is located. The port is the major import route for its neighbours including Nigeria. The country's GDP depends largely on subsistent agriculture and cotton export for foreign exchange. Its average rainfall is between 900m and 1300mm annually and an average 26 – 28°C temperature. The country is administratively sub-divided into 77 municipalities (Dayou, et al., 2020). The country has a land area of 114,763km2 with an estimated 12, 996, 895 population as at 2021 (The World Bank, 2021) from 8.4 million in 2005 (AfDB/OECD, 2006) with 65% of the population less than 15 years. The main food crops in the country are maize, cassava, palm tree, ground nut, beans and others. The country benefitted so well from the 2004-2005 Sahel region food crisis. Maize experienced a high output with a 25% increase resulting in more than 925,000 tonnes that year. Benin is one country that has achieved food sufficiency for its population and it is an exporter of food within the region. It equally exports cotton which is its major cash crop.

At the tertiary level, the country depends largely on the trade at its port, as it serves as an entrepot country for its landlocked neighbours, Burkina Faso and Niger but especially for its larger neighbour, Nigeria. Nigerian importers prefer to use Cotonou due to its customs duties and taxes. The opening of Nigeria's borders in 2021 that

resumed traffic at the Cotonou port and improved port governance grew the Benin Republic's GDP from 4.9% to 7.2% that year (AfDB, 2022). The country is plagued by climate change, insecurity in the north, inconsistent commodity prices especially cotton and oil, and the impact of the Russia – Ukraine war. Land degradation, a consequence of climate change caused the loss of over 2.2 million hectares of land between 2000 and 2010 thereby prompting many Beninese to migrate. Over 40% of the country's population around 4.4million of its citizens live abroad mostly in Nigeria and Cote d'Ivoire.

Burkina Faso

Burkina Faso, a landlocked country is bordered by Mali in the north, Niger in the northeast, Benin Republic and Togo in the southeast, Ghana and Ivory Coast in the south and west respectively. It is among the Oxfam described 10 world worst climate change hotspot. Two of the ten (Afghanistan, Burkina Faso, Djibouti, Guatemala, Haiti, Kenya, Madagascar, Niger, Somalia and Zimbabwe) are in West Africa. These countries currently have an estimated 48 million people in extreme hunger and 18million at the brink of starvation (Oxfam, 2022). Burkina Faso has a high rise in acute hunger.

Country	Number of UN appeals with weather extremes as a major factor 2000-2021	Population in acute hunger (IPC 3+) 2016	Population in acute hunger (IPC 3+) 2021	Rise in acute hunger (IPC3+) 2016-2021
Somalia*	16	2.9	3.5	21%
Haiti	12	1.5	4.4	193%
Djibouti	9	0.2	0.2	0%
Kenya*	9	1.3	2.4	85%
Niger	8	0.3	2.6	767%
Afghanistan	7	8.5	22.8	168%
Guatemala	6	1.5	3.7	147%
Madagascar*	6	0.8	1.6	100%
Burkina Faso	6	0.2	2.9	1350%
Zimbabwe*	6	4.1	3.4	-17%
Totals	**85**	**21.3**	**47.5**	**123%**

Note: Due to changes in geographic coverage of these assessments between 2016 and 2021, numbers should be seen as indicative of the change over time.

** Countries where weather extremes were the primary driver of acute hunger in 2021.*[24]

Figure 12: Hunger and climate change most impacted countries. Adapted from Oxfam Climate Change Report, September, 2022.

Burkina Faso has recently been a crisis hotbed that did not just emanate from the clouds but as a product of regional conflicts. Recently, the realities of the neighborhood effect argument and the negative spillover effects concept unexpectedly hit the country as religious extremism that began in northeast Nigeria in 2009, the infamous Boko Haram spread quickly into Cameroun, Chad, Niger and later Mali. Mali became the epicenter of terrorism in the region. It was speculated that the crisis would not reach Burkina Faso since the country has a long history of religious tolerance and peace. Relying on the experience of the Mano River wars in the 1980s and 90s when the 1989 Liberian was spilled over into Sierra Leone and Cotê d`Ivoire yet Burkina Faso remained peaceful. Many opined that Burkina would not be influenced. Surprisingly, it spilled into the landlocked country and continues to ravage it since the January 2016 terrorist attack in the capital Ouagadougou and the November 2016 Jihadist insurgency. The two prominent groups in the country aligning themselves to two major global terror groups namely, al Qaeda and the Islamic State are currently scrambling for territorial control (Haavik, *et al.*, 2022).

The consequences of these security challenges have resulted in coup d'état and counter coup d'état which has further polarized the country and affected the economy negatively. In December 2020, 28 bodies of men were found in northwest Nouna, Kossi Province of Boucle du Mouhoun region. These men were reported to have been killed by the armed civilian defense support group, Volontaires pour la Défense de la Patrie (VDP) who were said to have attacked and killed the members of the Jamāʿat nuṣrat al-islām wal-muslimīn (JNIM) who had killed their members earlier (UN News, 2023). The regular killing of soldiers has its impact on trade and internal security with their attendant effects on availability and cost of these essentials amidst the challenges of climate change with its attendant effects as well.

One economic impact of security issues locally is that it limits the free flow of goods and services thereby creating scarcity and inflation. With the scale of the crisis, Burkina Faso and Mali are now the epicenter of terrorist attacks. Local businesses are paying the price as they can no longer transact freely especially with regards to importation since the country relies on its neighbors for imports. The attack by terrorists on local businesses and communities in the country often result in looting of food stuff, valuables and killing. It has equally inculcated fear and caution in the stakeholders of food value chains especially the middlemen in the country. On the night of January 12-13, 2023, 50 women were abducted while hunting wild fruits in Arbinda, northern Burkina Faso and were reportedly found on January 20. Though local civil society group reported 61 women include 26 underage girls and infants with their nursing mothers (AA, 2023).

On January 29, fifteen people bodies were found near Linguekoro, Comoe Province where armed men stopped two minibuses carrying travelers from Banfora. They were asked to get off and of the eight men and sixteen women, eight women and a man were asked to walked to Mangodara a town in some 30kilometres away while the rest were abducted and the vehicles vandalized. The fifteen bodies found were those of the missing passengers (seven men, eight women). On Monday January 30, 2023 ten military police officers, two support defense officers and a civilian were killed in Falangoutou, northern Burkina Faso (Agence France-Presse, 2023). These deaths

provoked protests celebrating the pull out of French Military whom they had earlier on called to vacate the country. The protesters called on the government to join Mali in aligning with the Russian government for military support in its fight against terrorism.

The increasing push of the Sahara and the prolonged droughts experienced in the country has reduced the ability to farm and crop yield has declined considerably. Climate change impact is real in the country keeps pushing households and communities to the margin. Farmers in communities affected by intense desertification have resorted to seeking any other alternative to existence. As many migrate in search of arable land for their households and pasture, the increasing pressure on available resources and other communities have impact on their sustainability. Crop and food choices have leaned towards drought enduring yet nutritious crops like cowpea, fonio, maize, millet, rice, and sorghum. Tubers like cassava, sweet potatoes and yam are cultivated in more fertile areas. While cotton, groundnut, sugarcane and cowpea are mainly for export.

Cabo Verde (previously Cape Verde)

There has been an increasing literature on the impact of climate change manifestations on small island developing states (SIDS) in which they are often described as "frontlines", "hotspots", and most vulnerable habitats to climate change (Robinson, 2020; Thomas, *et al.*, 2020; Lai, *et al.*, 2021; Filho, *et al.*, 2021; Foley, *et al.*, 2022; Robinson, & Butchart, 2022; Thompson, D.D.P., 2022). Cape Verde (now known as Cabo Verde after the October 25, 2013 change to its Portuguese name) is one of them and it is the only SIDS country in West Africa. A strong debate on resilience in SIDS has revealed that these countries maybe too exposed, too weak economically and institutionally, too isolated, too fragile – especially due to their developmentally state – to withstand or be resilient enough for climate change manifestations. Cabo Verde fills in all the boxes of these challenges and were most recently hit by the consequences of the pandemic which affected the global tourism industry.

As a service-focused economy, the country´s dependence on tourism, commerce, transport and public services, the pandemic caused a shrink of its economy due to the lock downs, travel restrictions and slow return to regular lifestyle especially for the tourism industry. The Cabo Verdean government´s initiatives at reducing its 28% unemployment rate, high young population and fewer female employment through its entrepreneurship programmes has aided its economy in boosting its resilience. As well as reducing the economic effects of the pandemic and climate change on households and communities.

As a small island developing state, Cabo Verde is at the risk of losing land and heritage of coastal communities most of its islands should the projected effects of climate change continue. The country has many islands with beautiful beaches that attracts tourists from various parts of the world which makes tourism a major contributor to its GDP. The impact of climate change can be felt on the impact it has on biodiversity. The impact of climate change equally leads to flood when there is an increased amount of rainfall in the country. The low agricultural participation and output prompted the government to initiate an agricultural program for its population to help fight poverty and boost growth.

Côte D´Ivoire

Agricultural activities in most African communities depend on natural rainfall (Sultan & Gaetani 2016; Trisos *et al.*, 2022; N'Datchoh, *et al.*, 2022). Côte D'Ivoire is no exception. Although farmers have devised resilient methods like change of sowing dates, seed type, and introduction of organic manufacture, ox dung, drought-resistant plants and trees especially Cashew plantations (Timité, *et al.*, 2022). Yet climate change manifestations in Cote d´Ivoire have had their effects on food and water availability, accessibility, safety, and sufficiency in communities. It is more predominant in the semi-arid northern region with a dry climatic condition from 8◦ N to 10.5◦ N.

Unlike in the coastal southern region with a more humid climatic condition, 4◦ N to 6◦ N and a central tropical region from 6◦ N to 8◦ N. As a major Cocoa exporter, its agrarian

economy employs up to 70% of its 22million population based on a 2015 census and its population is expected to grow up to 48 million by 2050 (N'Datchoh, *et al.*, 2022), climate change is a serious concern. The livelihood of many households, businesses, and communities depends on its predominantly rainfed agricultural activities. Like most African countries, Cote d´Ivoire has a strong young population but it is unique because of the population of young people engaged in its thriving agricultural sector.

Gambia

Low-income agrarian economies like the Gambia are often hit by global shocks such as climate change, pandemics, recessions, and wars. Since the agricultural activities in these countries depend largely on rainwater, agrarian communities in semi-arid regions experience economic difficulties during the dry season. The Gambia´s main stay is agriculture which employ almost 75% of its 2.4million population. Its main export earnings come from groundnuts, cotton, fish, and livestock yet agriculture is poorly funded in the country (Bonell, *et al.*, 2022). Senegal, its northern-eastern-western neighbor is its main trade partner followed by Guinea Bissau, Benin, China, and India. Climate change effects on crops, livestock, the environment and rising sea-level impacts greatly on households and businesses in Gambia. Its service sector has grown significantly especially its transport sector but the low SME growth in the country is blamed for the low access to loans (UNCTAD, 2022).

Food shortages in the Gambia prompted a rise in food importation which has made the country heavily import dependent. As a panacea to this, the government-initiated programs to boost agriculture and move the country from traditional to commercial agriculture. These programmes have medium- and long-term impacts of increasing food and livestock production for the domestic economy. But would still not end food deficit. To meet up with household food demand – in the country due to the impact of climate change which would lead to a projected 15% to 35% food shortage by 2055 and 2085 respectively amidst the expected population growth by 2050 (Belford, *et al.*, 2022). Rice, Groundnut, Millet, Sorghum, and Maize are some of the main foods consumed in

the country while fish, milk and cattle are major sources of protein. The expected food shortage would lead to hunger, deprivation, starvation, malnutrition, and diseases.

Ghana

Climate change impacts on people at the margins of society in informal urban settlements is high considering the scarcity or unavailability of adaptive measures and techniques. Like poor rural marginal communities, poor urban settlements are predominately informal and have poor adaptive capacities, decisions and ability to mitigate the obvious impact. Women and children in such households are the most vulnerable in most developing countries including Ghana. They make up 43% of developing countries agricultural labour force and 46.4% of Ghana´s primary agricultural production. In Ghana´s Upper East region, they make up about 80% of agricultural labour force (Nuhu & Matsui, 2022). The gender dominance in agricultural labour force in Ghana´s Upper East region is largely due to the traditional male-dominant land tenure system where like in many developing societies, land related decisions are made by male chiefs, family heads and religious leaders. Women in the absence of male users can gain temporary access to lands with their husband´s consent. Upon the death of a man without a son, the widow loses access to the land. Despite gender equality laws and public policies by successive governments for decades, the system persists (Antwi-Agyei, *et al.*, 2015; Nyantakyi-Frimpong, 2020; Nuhu & Matsui, 2022).

Climate change impact on sectorial performance in Ghana shows that it partly contributes to a decline in the input of agriculture to the country´s Gross Domestic Product (GDP). It only contributed 15.3% in Q3, 2019 and 19.7% in 2021 from 41.3% in the 1990s, 45.5% in 1991, 59.7% in 1983, and 60.7% in 1978 during the commodity price boom when it peaked (Tetteh, Baidoo & Takyi, 2022; World Bank, 2022b). Since the late 1970s, its input keeps depreciating yet it employs 44.7% of Ghana´s labour force, aid its industrial growth and foreign exchange earnings by suppling raw materials and cash crops for export. Ghana´s 31 million population is vulnerable to climate change despite

being a low-middle income country. Climate change effects like droughts are felt more in the northern area where it shares boundary with landlocked Burkina Faso to its north. Unlike where it shares boundary with Cote d´Ivoire in the west, and Togo to the east. In the southern region close to the Gulf of Guinea, rising seas-level threatens the people, agricultural land and biodiversity should the coasts be submerged. This region have more access to water while a small part of its northern region is pruned to drought due to the dryer climatic condition of the Sahara Desert that is spread into its territory around Biankori to Kulungugu, Gumaketere in the upper northern regions down to Bansi.

Guinea

The Guinea highlands occupied mostly by the Fula tribe is home to some key waterheads – The Gambia, Niger, Senegal and Konkouré. They feed West Africa´s 22 rivers with sufficient renewable water resources. They are around 226km^3 yet suffers the effects of anthropogenic climate change with intense rainfall, flash floods, high temperatures, and reduced annual rainfall that threaten water quantity and quality for agricultural, domestic and commercial needs. The country is tagged Africa´s *river haven* because of the waterheads and is bordered by Mali in the north and northeast, Senegal in the northwest, Guinea-Bissau in the northwest, Liberia in the south, Côte d´Ivoire in the southeast, Sierra Leone in the Southwest and the Atlantic Ocean in the West. The country has many neighbours.

The highlands known as the Fouta Djallou Highlands (FDH) is 900 – 1500m above sea-level and is one of West Africa´s key ecologically important zones which is endowed with enormous bio-diversity. It is located in the central part of the country and spreads into Guinea-Bissau, Mali, Senegal and Sierra Leone. It occupies about 26% of the country – around 63,600km^2 – and it is covered by forests (USAID, 2022; Ceci, *et al.*, 2014, 2018 & 2022). Coastal erosion is destroying forest resources, and has resulted in the near disappearance of relics in Guinea´s coastal forests (Vousdoukas, *et al.*, 2022).

The United Nation (UN)´s Food and Agriculture Organization (FAO) is implementing an US$11million environmental intervention programme – Global Environmental Facility (GEF) – to save the ecosystem from land degradation and improve the livelihood of its inhabitants (FAO, 2008; Ceci, *et al.*, 2022). The country´s low-level area is home to 6% of Guinea´s 13 million population and has been exposed to rising sea-levels including the coastlands. Salinization increment of water sources and coastal flooding from rising sea-levels affects agricultural activities and yield, clean water availability, mangrove environment, biodiversity and coastal infrastructure. Households and businesses are affected by these effects given that 70% of Guineans are engaged in agriculture which is 25.5% of the country´s GDP (World Bank, 2022). The inhabitants of this terrain are predominantly peasant farmers who grow crops around home gardens.

The impact of climate change has prompted south to north migration in the country. While most parts of the subregion are fleeing the push of the Sahara, the people of Guinea´s highlands are fleeing from erosion, floods and others impacts of climate change associated with proximity to waterheads, river tributaries in a region of highlands. They respond to climate change vulnerability by migrating to areas with level land which has been a trigger for insecurity and regional crisis.

Guinea-Bissau

In Guinea-Bissau, climate change effects have displaced households and communities as ancestral and farmlands are lost to the manifestations of climate change. In response, the affected households and communities migrate. The loss of lands and livelihoods has many implications. It leads to hunger, poverty, distress and suffering on the one hand, migration, conflict and death of humans and livestock on the other. The affected households and communities often clash with their host. This has led to long-term instability because of communal clashes and counter-conflicts in the region.

At the individual and communal level, it breeds an aggressive psychological orientation in the migrants who are pruned to fighting for any resistance against their presence or against their quest to possess their host´s farms, lands or territory whether temporary

or permanently. The psychological effects of the loss and the opposition to an occupation attempt from host communities breeds aggression in communities and regions. Such response and the mentality associated with it is responsibility for the many communal crisis that has been recorded in the country in the last decades. The opposition against migrating communities keeps pushing most displaced households and communities especially the Fula pastoral communities to further migrate into other communities and countries in search of pasture and better ecology for breeding their animals. The same mentality is carried along leading to the several farmers and herders' conflict in many communities and countries in the region that has resulted in avoidable losses especially loss of lives.

The resettlement of displaced households and communities remains an issue not properly accorded attention to in most countries in the subregion. There is the loss of the symbol of identity which affects the affected individuals and community both psychologically and socially. When making references to their ancestry or roots these individuals and communities are faced with the harsh reality that places and landmarks that served as cardinal points of identity and reference to their heritage are lost. In some cases, places where their dead were buried are affected and references to their ancestors or generations before are distorted. The psychological impacts are better imagined.

Another impact of anthropogenic activities on biodiversity in the country is continuous deforestation for Cashew orchards which threatens forest resources, woodlands and the rich biodiversity of Guinea Bissau. The investment made on the country´s forest and biodiversity resources in recent decades are gradually lost in pursuit of this economic activity. The recent planting of cashew orchards for harvesting and exporting cashew nuts that positively impacts on the economy of households and the country´s gross domestic products (GDP) is mostly carried out by first clearing the forests and woodlands which are the natural resource assets of the country, region and world (Pereira, *et al*., 2022). This has consequences on biodiversity and climate change.

Liberia

Bio-diversity-rich coastal least developed countries (BRCLDC – my abbreviation) are highly at risk of climate change and Liberia is one of such countries. The south-end and west-end of the country is located at Africa´s west coast. The country consists of three belts. The 40kilometer (km) wide low coastal belt consists of shallow lagoons, mangrove marshes and tidal creeks. The marine resources which is underdeveloped and residents in this region are threatened by climate change effects (Wuor & Mabon, 2022). Its second-belt has lots of rolling hills that are 60 – 150meters (equivalent to 200–500 feet) high. Other parts of the country that make up the third belt are dominated by highlands, low mountains and plateaus covered by lots of forests (World Bank, 2022d). This includes parts of the FDH and mountains that stretch from Guinea-Bissau to other countries. These belts which are home to its 5.06million inhabitants. They are endowed with rich animals, plants and ecosystem. Since agriculture and other climate vulnerable sectors like Forestry and Fisheries are cardinal (42.6%) to its economy with services (49.7%), Liberia remains susceptible to the effects of climate change.

Liberia is one of the wettest countries in the world (The World Bank, 2022e) with intense rainfall from May to October. Annual rainfall decreases from coast or south to the interiors to north with over 2,500 millimeters (mm) annual rainfall in the coastal areas and about 2, 030mm in the interior to the north-end where it borders Guinea in the north, Cote d´Ivoire in the northeast, and little of the area stretching into Sierra Leone in the northwest. Liberia coastal areas are prone to natural disasters, landslide and floods as a result of regular rainfall. The country consumes – 33,116 tonnes, 2014 – 2020 – more fishes than it exports – 123 tones, 2014–2020 – when it could improve on its marine resources to improve its economy. In 2020 alone, tuna vessels reportedly caught 15, 219 tons of fish in Liberia waters but did not land the fishes in the country due to poor port infrastructure (Neuman & Powers, 2022). The protracted civil war in the country destroyed its port facilities and dredging that is yet to be done since the civil war ended making docking of big vessels difficult.

The country is troubled with the burden of extreme poverty, unemployment, poor sanitation and the previous Ebola epidemic was equally affected by the Covid-19 pandemic which further crippled businesses and pushed many households to extreme depravation. During the Ebola epidemic, Liberia was one of the hardest hit countries especially the rural areas. Due to poor sanitation, the contagious disease was able to fester and spread fast and killed many before knowledge of how to combat the epidemic was available. Many of its health workers became victims of the deadly epidemic including its rural population. The impact of the epidemic stretched its medical system to its limits and the economy of the most affected states were severely battered (Malik, et al., 2022; Da Costa, 2020; Benton & Dionne, 2015). The pandemic further stretched the already weak health system in the country. The stronger impact was felt on the import dependent economy which was crippled by the lockdowns and supply chain crisis.

Mali

Climate change cost on landlocked, desertification-prone countries in the Sahel could be very high. The case of Mali has suffered prolonged drought, desert encroachment and an estimated 52% decline in per capital freshwater availability because of reduced precipitation amidst population growth. Deforestation is another cost that would impact on the economy and the inhabitants since 90% of the country´s domestic energy needs like firewood and charcoals, medicinal products, food and fodder depends on it (USAID, 2022). The country gets seaway imports through its southern neighbours like Senegal, Cote d´Ivoire and Guinea in the southwest. Water is sacrosanct in the Sahel as 95% of food production depends on rainfed agriculture. More so, agriculture employs an estimated 75% of Malians and provides 50% of its gross domestic product (GDP). Climate change instigated drought has annually affected about 80% of the Sahel and over 50% of arable land (La¨derach, *et al.*, 2022). This has resulted in 30–50% crop failures including in Mali. This regular occurrence of drought threatens food and water security and a spur for regular conflict in the country and region.

Acute floods caused by intense and regular rainfalls, and storms are common during the rainy seasons. One third of the flooding experienced in Bamako within 1982 – 2019 were caused by acute irregular rainfalls. For those born in 2021 in Sub-Saharan Africa, such experience is likely to increase 4.6, 8, and 8.6 times more. This can be understood from the comparison of a 1.5ºC warming level then to a 2.4ºC today and 3.5ºC by 2100 (Woru, *et al.*, 2022). These floods often cause loss of livestock, farmland, reduce farm yield, destruction of settlement areas and infrastructure. They also cause the overflow of the Niger River and land erosion. These affect freshwater resources in both surface and groundwater. Generally, it causes water insecurity. They expose the country and its ecology to greater risks and the people struggle to preserve their food and ecology amidst the encroaching desert. These stressors breed a psychology for combat.

Consistent conflict has been a cause for fragility in Mali and its border communities especially in the Mopti region or Liptako-Gourma where the country borders Niger and Burkina Faso. The availability of rich natural resources and various ethnic groups with complementary and sometimes conflicting socioeconomic traditions and interests makes the region a conflict hotbed. In January 2012, following the defeat of Mamman Gaddafi in Libya and the capture of the state by anti-Gaddafi forces, a set of Toureg separatists and three Jihadist groups – al-Qaeda in Islamic Maghreb (AQIM), Mouvement pour l´Unification et le Jihadist en Afrique de l´Ouest (MUJO), and Ansar Dine – attacked and took over three northern states, Gao, Timbuktu, and Kidal. After sending away the state and national security agents, they declared *Azawad* state. They further captured two districts, Douentza and Youwarou in the Mopti region. The Jihadist militia defeated the Toureg separatists and advanced southwards to the capital aiming to capture it when the French Military intervened in January 2013 (Cold-Ravnkilde, 2013; Cold-Ravnkilde & Ba, 2022a; Franco, 2022; Lacher, 2022).

The 2015 Algiers Agreement and the political, security and social responses that continued till 2017 focused on the northern region and other parts of the country with little attention on the central, Mopti region. Thereby allowing the increasing tension in the sensitive region to fester. In 2012, while state security focused on handling the crisis in the volatile northern region, crisis started brewing in the Mopti area and intensified

around the Burkina Faso border involving Dogon farmers and Fulani herders (Cold-Ravnkilde, 2022b). The crisis region is volatile as the crisis in the area still persists arguably due to a number of factors especially but not limited to arms movement and weapons proliferation along the ancient trans-Saharan trade route, the birth and growth of militias, poverty and inequality as breeding ground for extreme ideologies and cells, proliferation of illegal trade, internationalization of religious extremism, increasing effects of climate change, and struggle for resources. Asides, climate change and the pandemic, conflict is a major shock that drives fragility in Africa and this region is no exception.

Mauritania

Rapid urbanization and population growth in urban settlements puts pressure on ground and surface water quality and quantity. Declining freshwater resources in semi-arid areas of Mauritania though not in the case of Nouakchott, the capital which is home to a third of the country´s 4.8 million population that has increased from 500 in 1957 and 40,000 in 1970. Population increase, poor drainage network, among others have resulted in a rise of groundwater level by 1 to 2m. The impact on the quaternary aquifer overtime has led to a change of water source for the growing urban population. Semi-arid parts of Mauritania which constitutes a large size of the country are already experiencing the impact of climate change and anthropization on available water resources (Mohamed, *et al.*, 2017). Semi-arid areas are subtype of dry land with an aridity index (i.e. ratio of total annual precipitation to potential evapotranspiration) between 0.20 and 0.50. Semi-arid area soils are often degraded due to historical land use leading to poor structure, soil organic carbon content and are susceptible to erosion, salinity and degradation as a result of human activity (Garcia-Franco & Wiesmeier, 2018). Mauritania is mostly made of flat lands covering most parts of its 1, 030,700 kilometers that lies at an altitude of about 3,300ft (i.e. 1000 meters) below sea-level making it the world´s largest lowland country. The Trarza aquifer in the country occupies 40, 000km^2 land area in the southwest between the Senegal River in the south, the Atlantic Ocean in the west and the Mauritanides metamorphic chain in the north

and east. An aquifer is a lowland area with underground rocks or sediments that holds and retains groundwater (Mohamed, *et al.*, 2017).

Mauritania is surrounded by Algeria and Western Sahara, in the north and northwest respectively, the Atlantic Ocean in the southwest, Mali in the east to southeast, Senegal in the southwest which makes it fit into both the Sahel and the Maghreb regions. Tourism in the country usually involves excursion to the dunes, oases, gueltas and canyons (Hamoud, *et al.*, 2021). Historically, it was part of the ancient Songhai Kingdom. Lately, due to the increasing push of the Sahara, drought, and tougher environmental conditions more Mauritanians have migrated to urban settlements especially the capital. Initially, Nouakchott was constructed for 15, 000 population and it was chosen as the capital because it does not have different ethnic inhabitants unlike other regions. The arrival of migrants from rural areas led to the construction of shanties and informal shelters which aided the expansion of the capital. The pressure that the expansion brought on groundwater resources included losses from water distribution networks, infiltration from sewage systems, evaporation of groundwater in the topographic depressions. Since 1960, the city depended on water pumped from a 60-kilometer distant Idini well field in Trarza aquifer in the southeast. A change to surface water from the Senegal River through pipes to the city was made in 2011.

The Mauritanian waters are part of the Canary current large marine ecology (CCLME) which is a Global Environmental Facility (GEF) project focused on the Atlantic Ocean around the North West Coast of Africa that involves seven countries – Cabo Verde, Guinea-Bissau, Mauritania, Morocco, Senegal, Spain and The Gambia – whose territories covers the 5400km and 2million km^2 sea area and a cumulative population of 64million. The Mauritania waters is one of the richest fishing areas in the world and the state makes 20% of its revenue from rents. Unfortunately, foreign fishing firms profit more from its abundant fish resources especially European, and now Turkish and Chinese companies who also invest in fish processing in Mauritania asides fishing vessels who fish for small pelagic species like migratory Sardines, sardinelles, and horse Mackerel and control in market in the Gulf of Guinea to the West African West Coast (Sambe *et al.*, 2016 & Touron-Gardic, *et al.*, 2022).

However, climate change is affecting the sustainability of agriculture, small scale animal husbandry and trade which employs most Mauritanians. Most of its export earnings are from the extractive industries especially Iron Ore, Gold, Copper, gypsum, cement, salt, steel and soon oil. It is endowed with rich wildlife and animals. Like most countries, its export and domestic economy suffered during the Covid-19 pandemic as a result of the lockdown of all its land and air borders, markets, schools, movement restrictions and a night curfew (El Vally, *et al.*, 2020). The shock that came with this measure further increased household poverty and strangulated more businesses in the country.

Niger

Cumulative multiple shocks chronologically expose the Sahel to fragility on various fronts and puts pressure on human, animal and plant survival in the region. Landlocked, security stressed, flood prone, prolonged drought suffering Niger has 3.8 million of its citizens, households and many communities in need of aid after being displaced by conflicts, terror attacks and insecurity yet another 1.5 million are severely food insecure (Alvar-Beltran, *et. al.*, 2022). Most of the population reside in the southern part of the country and has been suffering from droughts and soil degradation that has been hindering the country´s agricultural performance. Despite concentration on drought friendly crops like Millet and Sorghum, reduction in quality of yield has been caused by poor soil nutrient. Since 1970-89 to 2010-20 the cultivation and harvest of millet and sorghum has increased from 2.8–7.0 million hectares (ha) and from 0.9 to 3.5million ha.

Since the new millennium, there has been a decline in Sorghum harvest from 0.59tons/ha in to 0.38tons/ha. Cowpea is another key crop that provides proteins, vitamins and minerals to reduce malnutrition for animals and humans in rural Nigerien communities. Like Mauritania, the brevity of rainy season from June to September with a long dry season, from September to May makes the soil structure aerosol, poorly developed with limited organic matter content and soil nutrient deficiency. It is difficult to cultivate many types of crops and the traditional dependence on rainfed agriculture

is unsustainable. The impact of climate change and desertification especially in the north of Niger and the conflicts worsen food and water security for the world´s fastest growing population (Issoufou, *et al*., 2020).

A study on woody plants identified a decrease in woody cover and shrub size in western Niger between 1992 and 2012 and in south-west Niger from 2000 to 2014 (Hiernaux, et al, 2022). This study is important given that the depletion in woody plant density or crown cover is cardinal in evaluating environmental degradation. More so, tree planting is the best desertification preventive and combating mechanism. The highest woody plant crown cover in African Savannas is determined by mean annual rainfall at least 100 and 600mm per annum though they are mostly lesser.

Niger is within the Sahel belt which is around 3million kilometer^2 south of the Sahara Desert, where deforestation (mostly for domestic fuel and herbal needs) – since the colonial era and became more intense since the 1970s – have intensified the push of the Sahara. Annual rainfall reduction due to the effects of climate change is affecting the agricultural performance including woody crown covers. The Dantiandou district which is 80km from Niamey covers 499km^2 in southwest Niger have witnessed lots of such depletions despite being the southwest and having a better topography with more rangelands and agricultural lands unlike in Madama, Toummo, Chirfa and other areas in the country´s far north where strong desertification has made green vegetation scarcely available.

Nigeria

Climate change impact on food security increases poverty. Low farm yield which is spurred by factors including extreme temperatures. Timing or prediction to determine when to plant? and what to plant at each time? becomes part of mitigation measures adopted in rainfed agricultural practices which is predominant in sub-Saharan Africa. (Adeagbo, Ojo & Adetoro, 2021) Nigeria is one country where increasing poverty level is strengthened by climate change and would endanger many individuals, households and communities. Recent climate change manifestations flooding in the country would

likely increases food insecurity, hunger, poverty, and inequality. Sub Saharan Africa and indeed Nigeria is one of the regions expected to be most affected by climate change. In real time, the country´s annual temperature was projected to increase by 0.04ºC from 1981/2000 – 2046/2065 and 0.08ºC after 2050. The effects are estimated to amount to increasing rainfall around 15cm annually in the southern part of the country and 7.5 cm lesser in the northeastern part with drier atmosphere. The manifestations of intense heatwaves, irregular rainfalls and flooding, and other natural disasters have brought untold hardships to many households and communities. In the southern parts of the country, there has been more rainfalls and floods while the desert encroaches further with fewer rains and higher temperatures in the northern parts. Economically, climate change was projected to cost Nigeria over US $100billion in damages which was between 2% - 11% of its GDP by 2020 and over US$460billion around 6 – 30% of its GDP by 2050 (BNRCC/NASPA-CCN, 2011; Nwuzor, 2018; Ochi, Ezeamu & Jachin, 2022). The diminishing value of the Nigerian Naira makes it difficult to peg a domestic equivalent to the financial implications of climate change in the country today.

In 2012, the country witnessed intensive rainfalls that resulted in unprecedent floods. The intensity of the flood was so much so that crocodiles were seen on the streets of Makurdi, the capital of Benue state which is situated around one of Nigeria´s major rivers, River Benue. Over 800kilometers of Nigeria´s coastline areas are susceptible to rising sea-level and surging storms. Between 2011 and 2020, the National Population Commission presented a record of the floods in the geo-political zones of the country. Surprisingly, the semi-arid northern region had more droughts?? than the south. In the data below, the northwest recorded the most flooding followed by the northeast 20 and northcentral 19. The fewest flooding was recorded in the Southeast.

Figure 13: Major flood frequency by geopolitical zone 2011-2020. Source: The Centre for Research on the Epidemiology of Disasters (Umar & Gray, 2022)

The stacked bar chat above shows 2011-2020 major flood frequency by geopolitical zone (From: The Centre for Research on the Epidemiology of Disasters [31] in Umar & Gray, 2022).

In early October 2022, flood submerged many communities in 33 of Nigeria´s 36 states. In the oil rich Bayelsa state, residents evacuated themselves through canoes, swimming, walking through flood water from their flooded homes, streets, and neighborhoods in many communities due to excessive floods that took the lives of many. Communities in most of the states around the country´s major rivers were flooded. Half of Kogi state where the two major rivers – Benue and Niger – meets have been submerged, 40% of its neighboring Anambra state have equally been submerged including many communities in the states of the oil rich Niger Delta region especially Bayelsa state where most of parts of the state came under water. the flood was caused by torrential rainfall and the release of dam water in the Cameroon.

The flood has isolated the state from the rest of the country as the highway linking the state to others remain underwater. The government stated that there were 600 deaths, and over 1.5 million displaced especially women and children. Many houses were submerged, canoes used to access routes that were normal land and buried corpses exhumed by raging flood waters in Azikoro village in Bayelsa state yet many displaced people were left with no option than to use the waters of the flood – since there were no pipe borne waters and other amenities – to meet their daily water needs like drinking, cooking, laundry, dish cleaning and so on – amidst the risk of cholera (*Displaced by devastating floods, Nigerians are forced to use floodwater despite cholera risk*, October 26, 2022). Already increased cholera outbreak has been reported in 31 states including Bayelsa.

Irregular rainfalls in most parts of the country have resulted in early cessation and late start of the annual rainy season in a country where rainfed agricultural practice is predominant. The disproportionate effects on agricultural activities have huge implications for food security in the country´s rapidly growing population. In both extremes of the far north, increasing drought and desertification reduces the farming duration, the dynamics of crop type to be cultivated and crop yield. The reduced rainfall, encroaching desert and the 90% reduction of the famous Lake Chad which farming and nomadic communities in four countries – Cameroon, Chad, Niger and Nigeria – depended on has forced many farmers to migrate to cities or other areas and nomads with their herds migrate to the hinterlands in search of better breeding grounds for their animals.

The Lake Chad basin was one of Africa´s biggest freshwater bodies that aided the livelihood of around 30 million people. Since the 1970s, the effects of climate change, population increase, and overdependence has contributed to the vanishing of the lake. Today, the lake is a shadow of its 1950s state. It has lost over 90% of its water resources. In the 1950s, it occupied more than 37,000 km, about 26,000km in 1960, 15,000km by mid-1990s and 1,350km^2 at the dawn of the new millennium in the 2000s. The Lake Chad has two basins, the northern and southern areas divided by a swallow part called the Great Barrier. Droughts over the years have continually dried up the northern divide

and the southern divide kept a free water area despite the huge loss as can be seen in the figure below. Lake Chad´s water loss has been attributed to factors like the flow of water to dependent tributaries like the Chari-logone, Komadugu-Gana (Lesser Yobe Ebeji), Ebeji Mbuli, Botha El Beed, the Yedseran, Ngadolu, Ngadda, Komadagu-Yobe, Taftaf and Serbewel (Onuoha 2008 in Nwuzor, 2018). The evaporation of surface water is equally blamed for the vanishing of the Lake Chad. The picture below is a graphic presentation of the previous state of the lake in the 1960s and its current state in 2019.

Figure 14: The Lake Chad in 1960 and 2019. Source: Africa Renewal (2019), *https://www.un.org/africarenewal/magazine/december-2019-march-2020/drying-lake-chad-basin-gives-rise-crisis*.

The loss has resulted in frequent communal clashes between farmers and nomads grazing for scarce pasture usually on farmlands cultivated by farmers in farming communities. Local fishermen in the northern divide suffered the most with the loss of their livelihoods yet the dried lake paved way for farmers to have large areas of fertile farmland to cultivate. In the southern divide, the drying up had a devastating impact on the Lake Chad Basin irrigation project that spread across communities in Nigeria and in

Northern Cameroon, it had terrible impact on many hydraulic projects of various categories that depended on the lake. On all sides the impact has been excruciating for locals who mostly depend on it for sustenance. Usually, the Lake Chad is fed from the south by the Chari and Logone Rivers which provides 82% of its water content in its best days. The water flows into its southern divide, fills the sands bars of the Great Barrier zone and flows into the northern basin which is available for communities in Niger Republic. The northern basin is fed by the Yobe River which flows from the Jos Plateau in northern Nigeria and provides 4% of the Lake Chad water resources. The remaining 14% is provided by annual rainfall (Luxereau, *et al*., 2020). The explains why droughts in the region has greatly affected the Lake Chad.

The impact of farmers-herders clash in various parts of Nigeria especially in the northcentral, and southern regions affects the sustainability of households and communities. Another security issue that threatens food security in Nigeria is the attack of terrorists and bandits on farming communities. The attack overtime has metamorphosed from simple food bank robbery and rape of their women to kidnapping of people in rural and urban communities for ransom and forced levying of farming communities by these terror gangs. These terror gangs no longer operate in clandestine manners. In most cases they write farming communities to make huge financial demands which they must pay to avoid being attacked. The abandonment of farming activities by farmers due to these factors has greatly reduced food availability in Africa´s most populous country. Food insecurity is at an alarming rate in the country.

President Muhammadu Buhari at a meeting organized by the UN Office for the Coordination of Humanitarian Affairs, the African Union (AU), the European Union (EU) and the Organization for Islamic Cooperation (OIC) during the 71st Session of the UN General Assembly in 2016 re-echoed the long existing call for attention on the vanishing Lake Chad. He pushed for the 1990s proposal for a panacea to the revival of the lake by channeling waters from the Ubangui Basin which is a tributary of the Congo River in Central African Republic through feeder projects like dams, pumps and channels. While the lake keeps depreciating, the humanitarian catastrophe around it due to the activities of terrorists, bandits, and nomads keeps piling.

Water economy like resource management has huge implications for Nigerian farming communities and nomads including migrants from other African countries who usually migrate from the Saharan-Sahelian regions to Nigeria´s hinterlands. The shrinking of the River Niger comes with high costs for many farming communities in Nigeria. In the dawn of the new millennium, the River Niger was said to have contracted by a third of its size. The 1985 and 1990 droughts dried up some parts of the river which travels through nine countries – Benin, Burkina Faso, Cameroun, Chad, Côte d´Ivoire, Guinea, Mali, Niger, and Nigeria – from its head in Guinea through 4,200km snaking journey to the Niger Delta region in Nigeria where it pours into the Atlantic Ocean through the Gulf of Guinea. It is Africa´s third longest river after the Nile and Congo. It is an essential waterbody for landlocked Burkina Faso, Mali and Niger. Despite the level of contamination from residents in Bamako and other cities and communities in Mali and Niger resident at its banks, it is still essential for agricultural activities and serves the needs of about millions of people. Climate change impact would further endanger the livelihood and living conditions of households, business and communities that depends on it.

The River Benue is equally suffering same fate as the waterbody which the River Niger´s lengthiest tributary shrinks. It originates from Northern Cameroun at the Adamawa Plateau located around 52kilometres from Garoua and occupies a 1402kilometres distance and serves as an important freshwater and livelihood source for largescale and peasant farming and fishing communities located at its banks. It is linked with the River Gongola at Numan, Adamawa State, Rivers Donga and Tella in Taraba state and River Katsina-Ala in same Benue state before flowing down to Lokoja in nearby Kogi state where it confluences with the Niger. The shrinking of the river threatens the livelihood of these farmers and fishermen whose lives and futures depend on the Benue. Climate change is blamed for the shrinking of the Benue River (Ojeh, *et al.*, 2021). The Upper Benue River Basin area is gravely affected with water area and level decline.

Senegal

Less water demanding cereals like Sorghum, Pearl Millets and Groundnuts or peanuts are commonly cultivated in semiarid regions of Africa and South Asia where the dry climatic condition of these regions and the ability of these crops to grow in hot weather conditions aid food production. In Senegal, these crops are important food, feed and fodder sources. Since farming in Senegal like many other African countries are subsistent rainfed agriculture system, declining rainfall, rising temperatures and water stress affects yield. Climate change manifestation has necessitated the need for adjusting planting seasons part of the people´s delicacy. West Africa´s changing climatic condition is expected the intensify from 1.0 – 1.4ºC by the middle of this century (mid-century, 2040 – 2059) and a rise to 2ºC could intensify crop water and irrigation needs amounting to fewer available irrigation. Despite depending more on cereals-oriented cropping system and cuisine, climate change is expected to decrease crop yield in Senegal and West Africa (Araya, *et al.*, 2022).

Most soils in Senegal are sand-sandy loam soil which is light textured and low to moderate water retention ability in its soil root zone. Peanuts and Pearl millet are often grown in such soil types especially the red and light textured soils which are locally called “Dior” soil. Usually, crops grown on low water holding soil endures limited water or drought stress that are likely to lead to poor yield due to poor nutrient uptake, photosynthesis and translocation, hinderance of growth, development and reproduction. Since Senegal has three climate zones namely coastal (in the Atlantic coastal areas), Sahelian (in the northern area with warm Saharan climate) and Sudanic (in the southern area about half the country with the hot and humid climate). zones.

Senegal´s six agroecological zones – River valley, Niayes valley, Peanut basin, Silvo-pastoral zone, Eastern Senegal and upper Casamance and lower Casamance – determine its socio-economic and physiographic features. Although Peanut, Pearl millet and Sorghum are grown in all these zones, other crops like Maize, Rice, other types of Millets and other crops are grown depending on soil type. However, some crops are predominant in some areas. In Peanut basin, peanuts and millet are the main cultivated

crops and River valley is rainfed Rice. More so, 95% of cultivated land in the country are used for rainfed agriculture.

Crop and livestock production are sacrosanct to the Senegalese population since agriculture employs 69% of the population directly and indirectly and contributes to 15.3% of GDP in 2021 (World Bank, 2021a). The service sector is the major contributor to GDP in Senegal. The country exports are mainly resource oriented with oil, gold and phosphate taking the lead while fishery and groundnut/peanuts follow. In order to mitigate the effects of climate variability in West African communities including Senegal, farmers use a number of indigenous and current coping methods like soil and water preservation practices, water harvesting practices, and information services that aid in rain and planting timing, crop choice sequel to rain timing. Utilizing the Multidisciplinary Working Group (MWG) model, many farmers are able to get tailored weather forecasts and climate information in swaying management responses and better yields and returns.

Scientists use the MWG model to communicate with local farmers to synchronize farmers´ indigenous knowledge and weather forecasting with scientific weather forecasts to discover local level knowledge gaps and improve confidence in scientific weather predictability. At the local level, MWGs also manage an early warning system using the climate information they get from the National Metrological Agency (ANACIM). The MWG airs special programs on the local radios through which it disseminates messages to farmers, policy makers and the general public from its 10days meetings. Due to the interactive nature of the program, listeners are able to ask questions, provide more information and seek clarifications. As of 2015, 84 journalists from community radios were trained on climate information so as to reach some 740, 000 rural households representing 7.4 million rural population (Chiputwa *et al.*, 2019; 2020; 2022). Generally, weather prediction service and crop choice help aid in boosting resilience among smallholder farmers in Senegal.

Sierra Leone

As one of the poorest and least developed countries in the world that is ranked 181 of the 191 countries assessed in the 2022 United Nations Human Development Index from 182 of 189 countries in 2021, 60% of Sierra Leone´s 7million population have experienced multidimensional poverty especially poor access to basic needs, clean water, healthy food and education. The country has the most mortality rate in the world with general life expectancy less than 45 years. The over a decade long civil war the country experienced from 1991 – 2002 casts a huge shadow and impact on the country two decades later. The 2014 Ebola epidemic is another shock that crippled the resource dependent economy and still has impacts on households and communities till date. The 2017 climate change related natural disasters caused mudslides and floods that led to the death of over 500 people and displaced many households and communities. Many of these households and communities are to return to their original homes and are yet to recover. The migration of around 2.6million people from the hinterlands to the coastal parts of the country augmented pressure on marine resources especially fish stock in these regions. Over the years there has been a significant decline in fish stock in the country since marine resources are important protein source for three quarter of its population (Okeke-Ogbuafor, Stead & Gray, 2021). Although there are over 1500 active fishponds in Northern Province especially in Tonkolili District including Tombo and Goderich that have become big fishing communities.

Deforestation, a trigger for global warming is an issue of concern in Africa´s mangroves including in Sierra Leone. The country is endowed with rich forest resources which is threatened by continuous logging to meet increasing local and global timber, poles, bio-mass demand amidst wood supply deficit and rising population and increase in warming. The non-replacement of fallen trees and conversation of forest lands to mining, farming, grazing, shifting cultivation, and other activities have reduced Sierra Leone´s total forest cover to 14.7% of the land area (FAO 2020). In order to meet the increase shortage, there has been a rise in commercial plantation in the northern part of the country. In Africa, the poor replacement practice of trees and forest resources affects the future of natural resources, the environment, and the wood market in which

demand has long exceeded supply (Kanyede, et al., 2022). However, the efforts towards reducing exploitation of forests and natural resources through plantation development is commendable and would aid in mitigating the effects and consequences of climate change.

Land use which refers to land utility by humans for their benefits is cardinal to sustainability as agricultural, and economic resources and most of human activities are carried out on the land. The conversion of natural forests into farmlands, mining sites, plantations, housing and infrastructural development and so on are within the ambience of land use. Land cover on its part is the natural state of the earth surface or its biophysical state and its direct sub-surface that includes the biota, soil and topography, ground water and human modifications like roads and buildings. The pattern and purpose of land use differ from region to region. Since food is an essential, many communities use most parts of their land to crop and animal farming.

The earth has an estimated 13, 003 million hectares (ha) of land out of which 4, 889 million ha are dedicated to agriculture while about two-third of earth´s land cover is occupied by planted and natural forests, and human built settlements. Agricultural land is subdivided into permanent crops which makes up only 3% of agricultural land, arable land 28% and permanent meadows, pastures and rangeland 69% (FAO, 2013; Lahai, *et al*., 2022). This shows that grazing land occupies most of global agricultural land use. There has been a significant change in the last half a century yet the distribution in various continents differs. Asia, North and South America and Europe have doubled the size of its irrigated land while Sub-Saharan Africa has been dominated by pastoralism and itinerant subsistence crop production, natural woodlands for domestic fuel and drylands utility.

Sierra Leone has around 5.4million ha of land for agricultural use out of which 80% are devoted to upland farming. The government´s aim to increase food production, rural job creation, foreign exchange earnings from agriculture and land utility consequent upon the Land Resources Survey Project 2002 revealed that 75-80% of its arable land are used for food production. While the remaining 25% or thereabout are for perennial tree crop plantations mostly Cocoa, Coffee and Oil Palm cultivation. It gave out lands

for farmers willing to begin export purposed or non-food producing crops for commercial agriculture. Added to the impact of climate change that has dwindled the productivity of rainfed agriculture in the country, the reduction in the amount of land for crop cultivation has increase food scarcity. The recent land acquisition by multinational firms in the country has reduced land availability and accessibility for its indigenous population thereby increasing food insecurity and conflict among communities especially as most of the firms use the land for mining and tree crop plantations. Similarly, in most African countries, many rural and suburban communities are at the brink of food insecurity due to similar changes in land use, effects of climate change, poor yield, natural disasters and declining interest in farming especially food production. More worrisome is the fact that Sierra Leone like many Sub-Saharan African countries import staple foods (like Rice which costs the country over USD200million annually) that its abundant arable land can produce (Lahai, *et al*., 2022; Saddler, 2020; Buckley-Zistel et al., 2015).

Togo

Two-third of Togo´s 7.5 million population is directly or indirectly engaged in rain-fed agriculture which makes the country vulnerable to the manifestations of climate change. The recent droughts, intense heatwaves, and floods that the region has faced has had adverse effects on the economy of households and communities (Agbossou, *et al.*, 2022) which are largely dependent on subsistence agriculture. A country with only 9% of its rural population with access to electricity (World Bank, 2021) and ranked 162 of 191 countries in the 2022 UN Human Development Index (HDI) an improvement from 167 of 189 of 2021.

Access to energy is a regional crisis as 548 million of the 789 million people globally that had no access to electricity were in Sub-Saharan Africa and 890 million of 2.8billion globally that lacked access to clean cooking were in the region (IEA, *at al.*, 2020; Mang-Benza, *et al*., 2023). The pandemic came with its shocks on the Togolese economy which depends highly on imports through which it services the economies of its neighbours.

Many became unemployed throughout the lockdowns and the macroeconomic condition of the country became worse with the import embargo imposed by the Nigerian government which affected businesses in the entrepot state. Struggles with development realities at the micro level put many households at the brink of poverty as many daily-income dependent households in the country had their income sources closed hence the difficulty in meeting their basic needs especially food. The end of the lockdowns and later re-opening of borders revived the economy of affected households.

Climate change has been blamed for the annual flooding which the country experiences especially around the Mono river downstream region and the river basins of the country. The Mono river occupies 20,600 km2 and is 560 km long. This explains why the impact is usually high on communities located around it when it overflows its banks as a result of intensive rainfall. Each year, the country engages the services of its Ministries of Environment, Territorial Administration and Civil Protection including other humanitarian organizations like the Red Cross in assisting to evacuate and its help flood affected people resettle. In 2007, due to flooding dozens were killed, 13, 764 were displaced and 127, 880 people living around the river basins were affected. In 2008, 20% of the residents of the downstream Mono river and the River Basin areas were affected by floods caused by intense rainfall. Over 300kilometers of roads were washed off by the floods, 11 major bridges destroyed, and transport cost skyrocketed. These resulted in 1% inflation in 2007 and 9.1% inflation in 2008 due to damages done to farms and the resulting poor harvest which resulted in food insecurity. The unabated floods came again in 2010 affecting 8 communities and causing damages estimated at above US$38million (Ntajal, et al., 2017). On October 17, 2022 the flood killed 21 people, wounded 85, affected over 82,767 people, 7,320 houses collapsed, 3,947 homes were flooded, 7,744 hectares of farmland lost their crops (Afrol News, 2022). Each year, floods exert huge costs to the country´s public.

6. CLIMATE CHANGE EFFECTS ON HOUSEHOLDS AND COMMUNITIES IN WEST AFRICA

Prior to the discovery of the SARS-Cov-2 Virus commonly known as Covid-19, many regions across the world were suffering from the impact of changing climatic conditions. Weather extremes resulted in huge loss of financial capital, agricultural investments, properties, biodiversity and lots more. Intense heatwaves and wildfires, hash hurricanes and storms, increasing desertification and droughts, floods and gully erosions (which in some cases have swallowed large expanse of farmlands, ancestral lands, heritages and identities) in communities all resulting in unprecedented losses, were causing untold hardship and sufferings in various regions especially in developing regions including most parts of Africa.

Apart from Haiti and Afghanistan, the worst climate change affected countries are in Africa. The disasters are increasingly affecting households, businesses and communities in the continent. A reduction in Green House Gas emissions in the next 8 years is the panacea to the suffering conditions in these countries. The world is currently at 2.7ºC which is too dangerous and unsustainable. At 2ºC, it is estimated that by 2050, climate change would force over 720 million into extreme poverty. The same amount that was pulled out of extreme poverty in the last few decades. (Oxfam, 2022). Between 2008 – 2018, drought alone resulted in the loss of over US$37billion in middle- and low-income countries yet a global warming reversal nowhere close.

Most countries in West Africa would have to learn to live with the irreversible realities of changing climatic conditions which in the future would result in fewer rainfalls, total torrid temperature, aridity and mild aridity, longer dry seasons, and heavier longer rainfalls (Sylla, *et al.*, 2016). Climate change pose a direct peril to the livelihood of West Africans. The loss of land and decreasing yield would force many farmers to quit and engage in other economic activities that would lead to food scarcity, inflation, and hunger. Developing countries are known to be more susceptible to climate change effects and Sub-Saharan with lower rainfall, a warmer climate – that makes production less likely, higher contacts with weather extremes, poor chances of development fund

and poor climate change adaptation strategies is much likely to suffer more from climate change impacts (Schmidhuber & Tubiello, 2007 in Nwuzor, 2018). Households and small businesses are constantly in a survival struggle in both rural and urban settlements. The prevalence in rural areas with seemly no hope has continuously spurred waves of migration to urban areas. Hence the rapid urbanization in many countries of Sub-Saharan Africa is not due to development but due to scourging poverty. The implication for sustainability is huge especially as natural resources and farmlands in rural areas are left unutilized.

7. COVID-19 PANDEMIC: THE RIPPLES ON HOUSEHOLDS AND COMMUNITIES IN WEST AFRICA

The detection of the virus in December 2019 and its spread like wildfire caused it to be pronounced a pandemic by the World Health Organization (WHO) on March 11, 2020. With over 180,000 infections in 110 countries, the world shifted its attention to the pandemic that was killing its victims in numbers. Within a three-year period, the pandemic has killed more people in some countries like the US than the death it recorded (estimated by the National World War II Museum at 418,500) from the Second World War. The global data compiled by the John Hopkins University shows that Covid-19 related deaths by October 5, 2022, was 6.55 million with 619 million infections. The US has the most death and infections with 1.06 million deaths and 96.4 million infections. Brazil followed with 646 thousand deaths and 34.7million infections while India which has the second highest infection rate of 44.6 million has the third most deaths with 529 thousand. Despite the severity of its impact, the Covid-19 pandemic is not the deadliest pandemic to have plagued humanity.

Vaccine discovery and distribution contributed to reducing the impacts of the pandemic. As the pandemic declined, political aggression that were silenced by the pandemic reinforced themselves. Afghanistan became the first focal point where the Taliban utilized the pandemic break to rebuild its strategies. The weakening of the US economy, political will and foreign spending on wars inspired the terrorist group to

spread its network around the fragile country. The US interest in ending its longest war in a foreign land and the desire to cut cost propelled a US decision to pull out of Afghanistan. This decision became an opportunity that the revived terrorist organization capitalized on to run over the country and take over the government. The perceived humiliation of the United States in Afghanistan inspired the Russian leader, Vladimir Putin to launch an offensive against its neighbour, Ukraine with the thinking that the West was advancing towards it and were in their lowest war libido and are exhausted from the impacts of the pandemic (Muraviev, 2022).

West Africa remains one of the subregions in the world with low direct casualties of the pandemic. It recorded fewer infections and deaths. The lockdown initiated by governments, the supply chain crisis, demand and supply shocks all created scarcity and inflation that affected individuals, households and businesses the more. The shrink in income due to restrictions, job losses, scarcity, and economic comatose created poverty, ailments and deaths in communities. Urban poverty in Southern and West Africa fell by half between 1996 and 2012. The World Bank's 2022 Poverty and Shared Prosperity Report states that Covid-19 plummet the poverty reduction in developing countries. The pandemic had the strongest impact on global poverty in decades. Global extreme poverty increased from 8.4% in 2019 to 9.3% in 2020 due to the shocks linked to the pandemic. It forced over 70 million people into extreme poverty and growing the global extreme poor population to above 700 million.

An early study in Nigeria predicted that the pandemic had no significant negative implication on the macroeconomic variables like inflation, employment, exchange rate, GDP growth and so on, on the economy (Farayibi & Asongu, 2020). However, another study on the lockdown implemented during the epic days of the pandemic showed otherwise (Finck & Tillmann, 2022; Lafrogne-Joussier, et al., 2022; Eshiett & Uwhubetine, 2022). The lockdown affected value chain and distribution networks in various markets. Commodity prices like oil and gas, gold, diamond and so on witnessed price crash during the lockdowns imposed by various countries to contain the spread. Consumer products on the contrary witnessed prices increases due to the scarcity created by the lockdowns and the attendant value chain disruptions.

The inflation and job losses that set in drained most of the successes recorded by over a decade long poverty reduction policy initiated from the millennium development goals (MDG) era. As governments shut down offices, markets and public spaces, many in the informal sector who survive on daily incomes lost their sources of livelihood and households struggled with essentials. Interestingly most of African countries have larger informal sector workforce than the formal sector (ECA, 2021). As of 2021, the demand and supply shock that the pandemic brought about contracted the region's economy by 3.2% and moved 55million people into poverty. It created an obstacle to achieving the Sustainable Development Goals (SDG) by 2030 and the African Union's Agenda 2063 (ECA, 2021).

Although infection in the 47 countries of the WHO African region were low compared to the rest of the world, yet the impact was significant. Infection records in the region per "100 000 population ranging from 29·46 (Niger) to 25 061·16 (Seychelles) and deaths from 1·07 (Chad) to 151·66 (South Africa)" (Cabore, et al., 2021) contracted mic was said to be responsible for the 3.2% of contraction of the economy of the region. Despite the low infection rate, the socioeconomic effect was much higher because many households in the region depend on daily income and are highly vulnerable to slight shocks. The table below shows public investment on public health in each of the west African state vis-à-vis access to universal healthcare, household spending on healthcare services and other social protection spending by the states, social protection covered by pension, and workers' rights.

8. WEST AFRICA'S SOCIOECONOMIC CONDITION BEFORE COVID-19

Landlocked countries had more severe impact of the pandemic. Niger republic for example suffered greatly from severe shortages of medical equipment in treating its infected population and scarcity of personal protective equipment resulted in the infection of its scarce medical personnel which further stretched its already over-stretched medical system (Nzeribe, *et al.*, 2021). The country fighting incessant terrorist attacks, NTDs – Neglected Tropical Diseases – and other communicable and non-

communicable diseases that had humbled the healthcare system (Tchole, *et al.*, 2020). The impact of floods and droughts increased food and water insecurity among its population and moved many households and businesses into extreme poverty and unproductivity.

9. RUSSIAN WAR ON UKRAINE: THE PRICE HOUSEHOLDS AND COMMUNITIES PAY IN WEST AFRICA

Russia and Ukraine are called the breadbasket nations because they produce and supply many parts of the world with wheat, barley and sunflower which serves the calories needs of an estimated 40% of Africa's wheat supply (Burrier, 2022). Ukrainian exports meet the needs of over 400 million people globally. Around 98% of the country's grains are exported from the Odessa port which the Russians blocked. Although the blockade was brokered by Turkey, the purpose and mediation still leave the consumer with increased cost. Households and businesses bear the burden of paying more for food and other items including products not manufactured from Ukraine as market forces take advantage of the war to retain inflation. The 2022 Global Economic Outlook stated that the pandemic and Russia-Ukraine could make a lasting impact on Africa which may linger for a decade. The pandemic already moved over 21 million people into poverty in 2021 and 23 million job losses which continued into 2022 and may spill into 2023. The Russia-Ukraine war could force an estimated 1.8million people in Africa into extreme poverty by 2022 and 2.1million by 2023 (ADB, 2022).

The Russian war in Ukraine which is still ongoing has greatly impacted food and commodity prices, energy costs, and the cost of living. Ukraine which is an important food basket especially as a key producer of wheat, sunflower oil, and among other agricultural products was hindered from exporting its stored products by Russia to starve their income supply source. This hinderance created a supply crisis which caused scarcity that led to price hike for essential food items especially wheat an essential ingredient for making flour which is used in baking bread. Edible oil is another important cooking item seriously affected by the war in Ukraine as Ukraine is an

important producer of edible sunflower oil. The pressure on other producers of these food items created a demand crisis which resulted in scarcity and inflation. Bread is an essential food in many countries. The scarcity of wheat and edible oil led to a spike in both related and unrelated commodities.

The war propelled western countries to restrict certain Russian products in its territory as a strategy to cut Russian income and ability to fund the war. Various products have been restricted at various stages of the war. Foreign firms in protest shut down operations in Russia thereby resulting in jobs losses, scarcity in the domestic market, and affecting the Russian economy. Russia on its part reduced export of its energy to its western neighbours who are heavily reliant on its oil for their energy needs. This created a supply crisis in the international oil market controlled by the cartel, OPEC as European countries sourced for alternative sources to meet their domestic energy needs. The recent OPEC+ oil production cut from November 2022 at a time the West needs more oil for the winter cold is seen as a betrayal by Saudi Arabia, the current leader of the OPEC+ whom the US President Joe Biden had gone to court for a panacea to Europe's energy crisis consequent upon its decision to stop buying from Russia because of the war.

The inflation that followed these affects virtually all aspects of human transactions in the globalized world. The cost of defence investment on the war from friends of Ukraine especially Western countries leaves their domestic economies in struggle with inflation, high cost of living, budget deficits, among others. In addition to the fresh scars of the pandemic on many economies, and the cost of the war, there is the possibility of a global recession in the corner. Households and businesses are currently in survival struggles in the so-called developed regions. In the assumed developing world, especially in Africa where the informal sector is large and the rate of households in extreme poverty is high, the survival struggle is difficult. Communities and neighbourhoods are not left behind either as its inhabitants struggle to meet with essentials amidst rising costs while incomes and revenues are not increasing rather jobs and revenues are unable to sustain its inhabitants.

10. PREPARING FOR THE NEXT CRISIS

Crisis is almost always constant in West African countries going by recent trends. From terrorist activities to communal or tribal conflicts, from epidemics to natural disasters such as flooding, droughts, desertification and so on yet governments within the region are not preparing to safeguard the people from the effects of these crises. In most countries in Africa where the informal sector is larger and provides more jobs and household income than the formal sector, households need some form of income stabilizers like employment protection, wealth creation and protection facilities in communities to save people from the risk of falling into poverty at the slightest shock or mishap. In Kenya, the government introduced Livestock Insurance programme to secure pastoralists livelihood in northern Kenya from the effects of climate change like drought. Africa is ripe enough for such protection in virtually all professions like farming considering the effects of climate change.

Climate change adaptive and mitigation strategies are set up and implemented by governments, support groups and networks across the continent yet little is done to actually protect populations from the effects. As climatic conditions across the region changes, droughts would be experienced again. In most countries in the region sufficient investment is not made to solve the problems of drought, floods, storms, intense heatwaves and cold in communities yet the impact on food and water availability and accessibility keeps reoccurring. These effects of climate change would certainly manifest again and again. Households, businesses, and communities are often at the receiving end. Preventive measures are hardly taken. There is need to minimize impacts at community level whether rural or urban.

Increasing urbanization in most countries in the region puts pressure on already overstretched resources and infrastructures or their alternatives. In some cases, there are hardly available infrastructures. The absence of efforts to make up for the gap becomes difficult amidst a surging urban population. The River Niger suffers from pollution today courtesy of the absence of urban waste disposal system in most parts of Mali where urban waste in Bamako including faeces, plastics, decomposing organic materials, metal scraps are often dropped or emptied into it. This is not sustainable for

biodiversity, aquatic life, and water security. The users of the water would certainly suffer the consequence of this pollution. Since many farming communities depend on it, it is expected that actions should have been taken collectively to safeguard this important waterbody in West Africa. The Malian government in 2019 launched a €2.2billion worth national plan to save the Niger from pollution, silting, dredging and other cause of pollution. While this is commendable, there is need for joint efforts as other governments sharing the Niger river including Benin, guinea, Niger, Nigeria, and Senegal need to do same to save the common resources their population benefits from. The Nigerian government once planned to dredge some parts of its share of the river but blah blah blah.

The Ebola epidemic experienced in many parts of West Africa dealt a huge blow on affected households and communities directly. The severity of the epidemic which killed many of its victims was felt in many west and central African countries left many households in loss with the death of many breadwinners and parts of their households. The epidemic left many in shock and reduced economic activities in some areas as preventive measures were taken to curb its spread. These measures created scarcity and inflation of essential commodities like foods, water, medicines, sanitary items, and a handful of others. The ripples associated with it left many households unable to have sufficient food and basic necessities. Many communities experienced break in economic activities as the epidemic spread and people took preventive measures. Even in areas not affected by the epidemic, people took caution with their environment and movements. This limited transactions and increased inflation hence many households and communities were directly or indirectly affected. Yet there little or nothing was actually done by affected countries to forestall a repeat or resurgence of the epidemic. The governments can come together to sponsor vaccine production, standard preventive measures that are applicable at all levels, improved sanitation, and safety standards, and so on. There is much that could be done to improve herd immunity in the likelihood of such public health disaster.

The pandemic revived the features of welfare state or welfare economics in governance even in the capitalism capitals of the world. African states and communities need to

entrench such features in communities and regions of each country to serve as a safety net for households, businesses and communities who are vulnerable to the effects of climate change, epidemics, pandemic, conflicts and all forms of crisis. People in the region have suffered a lot and enough from the absence of these. The growing population in these countries need not swing into the same vicious circle that many have suffered in their country generations or decades before. The account of which are still available in history books, told or shared stories and movies. Governance in Africa especially in West Africa needs to be proactive in growing and preventing or minimizing human sufferings as much as they can through policies and projects. The Covid-19 pandemic should serve as a yard stick to work towards preventing disease transmission through early detection, dissemination, and control. Such preventive measure is yet to be put in place by any West African country.

Conclusion

The pandemic impact on households and communities at the margin in West Africa would last for some more time. Individuals and households suffered from the impact of the lockdowns initiated by various governments at the onset to the peak of the pandemic. Remote impacts were felt from reduced household incomes to food stuff and commodity scarcity and inflation occasioned by the lockdowns limited the purchasing power of many households and the impact on climate change limited the availability and accessibility of food and water in communities. Hunger and malnutrition increased and had a higher impact during the pandemic and afterwards more than Covid-19. In fact, while the world dreaded Covid-19, most West Africans dreaded hunger. Many individuals and households are yet to fully recover from the impact of that era courtesy of the subsequent social events that followed the peak of the pandemic.

The recent re-emergence of terror activities and conflicts in the sub-region led to further economic and political fragilities that affects households and communities directly and indirectly. Coup d'état and counter coup d'état recorded in some ECOWAS countries are responses to these security issues and existing political challenges. The impact of regional political instability affects households and communities through border closures and suspension from the regional bodies which affects transborder transactions especially the flow of goods and services. This has aided in increasing inflation in many countries. At the micro level of society where the burden lies there is increased hunger, malnutrition, poor sanitation, diseases and exclusion which if not checked would further increase vulnerability to epidemics, crime and further political crisis.

Ripples of the Russian War in Ukraine and the export embargo initiated by the Kremlin created scarcity since many African countries depend on Russia and Ukraine for bailey and wheat for bread which is a common necessity in many African households and communities. The war also increased petroleum pump price as Europe heaped

sanctions on Russia in badges as the war intensifies. These shocks created by food and energy price hike spurred inflation to other essentials. These have further emasculated the purchasing power of the meagre resources many individuals, households and businesses live on and would have effects in the foreseeable future.

The pressure on businesses have resulted in layoffs, closure of branches and units with enervated revenue. Most of African countries including West Africa have little or no social protection systems to help people, households and businesses hence communities watch as some of theirs suffer to survive amidst rising costs and depleting incomes and purchasing power. Shocks generally spur fragility. The effects of this triple whammy would most likely affect the future of communities in west Africa and would further many households, businesses and communities more fragile. There is a need for assessment of economies at community level to ascertain the impact of shocks (positive or negative), prosperity, economic performance and interventions in communities.

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