

WestAfrica

INSIGHT

CLIMATE CHANGE

Recognising the impacts on West Africa



Centre for Democracy & Development

Centre pour la démocratie et le développement

WestAfrica

INSIGHT

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EDITORIAL

This Issue: Climate Change:

Recognising the impacts on West Africa

“Climate change is the defining issue of our time and we are at a defining moment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more difficult and costly”. This is the view of the United Nations.

In this edition of West Africa Insight, five authors, reflect on the ways in which climate change is (re)shaping everyday realities for many residents of West Africa and what governments are doing in response.

Saratu Abiola looks at how African countries have sought to speak with a collective voice in international forums on climate change but notes that barriers, including access to funding, continue to limit their ability to introduce innovative adaptation and mitigating strategies. Staying at the regional level, Hindou Ibrahim, outlines the role that indigenous pastoralist communities and their local knowledge of the Sahelian terrain can play in protecting natural ecosystems on which many residents rely.

In Nigeria, Oghenetega Ogodo argues that Lagos needs to reclaim its wetlands to reduce the threats posed to residents livelihoods and lives by flooding and tidal surges. Whilst Abdullahi Murtala outlines the ways in which climate change is undermining peace and security in northern Nigeria and what the government is trying to do to preserve precious environmental resources.

Finally, Joseph Macarthy and James Clifton Polit discuss how a combination of increased rains, along with the cutting down of mangrove forests, is making Bonthe Island, in Sierra Leone more vulnerable to flash floods. They argue that the experiences of these more remote coastal communities must be part of wider government efforts to address climate change.

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West Africa's climate challenges: Overcoming imposed obstacles

The United States, one of the major culprits with regards to carbon emissions, had been ill-disposed to climate action even before it pulled out of the Paris Agreement - a global framework to limit global warming to below 2°C and pursuing efforts to limit it to 1.5°C - in 2019. The current US administration gets a lot of attention for its public opposition to climate change policy, but ten years after the G20 Summit in Pittsburgh, where the world's most developed economies pledged to phase out subsidies to fossil fuels, these countries, according to a report by the Overseas Development Institute provided US\$27.6 billion in domestic and international public finance, US\$15.4 billion in fiscal support, and US\$20.9 billion in state-owned enterprise investments to promote coal-fired power production in 2019.

African countries have been left frustrated by the unwillingness of the G20 countries, who are also the biggest polluters, to cut back on their emissions, says Oxfam Pan-Africa's Food

Security and Climate Change lead Alvin Munyasia. "The last Conference of Parties (COP) negotiations in Madrid did not end well as there was a lot of frustration over pertinent issues like carbon markets, climate induced loss and damage and financing for adaptation. It is also unfortunate that the deliberations watered down the spirit in which the Paris Agreement was achieved and highlighted the division between large polluters, emerging polluters, and the most vulnerable countries". Many countries in West Africa are increasingly feeling the impacts of climate change, even though, according to World Resources Institute CAIT Climate Data Explorer, the regions greenhouse gas emissions in 2014 were 994.70 million metric tonnes: just 2.03% of global emissions.

Rising sea levels as a result of climate change have been a threat to coastlines from Lagos to Dakar over the past decade; annual flooding, in areas susceptible to heavy rains, has caused displacement and loss of livelihoods; and the



Sahel region has seen an increase in temperatures of between +1.5–2.0°C recorded in the last sixty years. According to USAID's Climate Risk Profile of Africa temperatures are projected to increase a further 2.9°C by 2050. Given West Africa's reliance on the sale of raw agricultural commodities for income, and the risks these climatic conditions pose to farming, this could have major macroeconomic ramifications for economies throughout the region.

Forging a collective voice

To strengthen their negotiation stance, African countries have embraced speaking with one voice. They now coordinate their regional positions and national policies on climate change through the African Ministerial Conference on the Environment (AMCEN), whose secretariat is provided by the Nairobi-based UN Environment Programme. During the 2015 African Union (AU) Summit, AMCEN was asked to develop, together with the African Group of Negotiators (AGN), a proposal to support Africa on climate adaptation. The AGN is a technical body set up specifically to engage in negotiations with COP engagements. It has played a key role in building a cohesive stance on issues of significance to the African continent.

AMCEN and AGN's proposal development led to the launch of the African Adaptation Initiative in 2016. In the same year, the AU also created three climate commissions - the Congo Basin Commission, the Commission for the Sahel Region, and the Africa Island States Climate Commission - but these are yet to make significant impacts.

The ECOWAS Commission has a Centre for Renewable Energy and Efficiency; a Directorate on Environment; a Steering Committee on Climate Change; and a Commissioner for Agriculture, Environment, and Water Resources that work on climate change issues and

contribute to the AU's policy development. However, ECOWAS does not currently have a climate change policy unique to the region and the extent to which it has been able to shape policy development on climate change in individual countries is unclear.

Finding the funds

Climate financing continues to be a challenge despite the existence of entities dedicated to providing funding for climate change like the Green Environment Facility and the Green Climate Fund (GCF), part of the larger United Nations Financing Climate Change programme. Whereas any country can engage with the World Bank or the International Monetary Fund about the possibility of securing a loan, all African countries need to be accredited by these climate change specific financing entities to access the funds. That can be a long and arduous process says Chinma George, an external consultant with the International Center for Tropical Agriculture. "Before the pandemic, Nigeria had started work to put in place systems to access the GCF...but even after you put the systems in place, getting funding accreditation is another challenge altogether" she notes. Only 18% of the countries who access climate financing are classified as least developed countries, a category that applies to 12 of the 16 West African countries.

Difficulties in getting accredited to receive climate finance means that African countries usually must work with accredited entities, like UN agencies, who provide funds as loans rather than grants. This means that accessing these funds add to their, often rising, debt profiles. Of the US\$48 billion in climate finance, only 23-27% of it was provided as grants as of 2018 and only 20% of those funds went to adaptation. Even this might be an overestimation. Oxfam's 2018 Climate Finance Shadow report shows that the current system of reporting on finance provides for a possible overestimation, globally of between US\$11 to US\$15 billion. A great deal of funding noted as "climate finance" does not actually have climate change mitigation or adaptation as its explicit aim.



George believes that climate finance leans towards mitigation and away from adaptation, because of opportunities for western countries to use climate financing to open new markets for private sector interests. “Adaptation is less profitable or bankable than mitigation,” George says. “The technical know-how is in mitigation, and the technology is owned by western companies, so donors would be more willing to fund such projects because they can create business for western companies. This is much less so for adaptation, where you’re dealing with the impact that’s already been done and mostly just empowering local populations with skills and knowledge.”

The economic impacts of the COVID-19 pandemic will likely add to the challenge of securing international funding. “It was always difficult to get the EU and other countries’ governments to honour their funding commitments, but it will be especially difficult now,” George notes. “Budgets will be reduced and re-oriented towards COVID-19 recovery. While Europe is still financing climate change projects, the emphasis now is towards making sure the COVID-19 economic recovery is green.”

Nigerian innovation

Innovative approaches are needed. In December 2017 Nigeria issued its first green bonds; debt instruments that are designed to raise private sector funds from the market for climate projects and take advantage of financial markets that are gradually greening and divesting from fossil fuel projects. The country has raised N25.69 billion (US\$60 million) for climate change projects, according to the Federal Ministry of Environment’s Department of Climate Change (DCC). These have been used to fund education programmes, rural electrification initiatives that are now providing off-grid power supply to 37 federal universities and seven teaching hospitals across the country, and a National Afforestation Programme, which is helping to increase forest coverage by planting seedlings to cover 841 hectares of land. The DCC stipulates that only projects that provide clear and quantifiable environmental benefits, and that possess linkages with key targets in the Nationally Determined Contributions, can be funded using green bonds.



However, the Nigerian government's execution of green bonds is not without its critics. Climate change activists complained that the first round of bond issuance was capped at an entry level which excluded all but a limited number of high net-worth individuals and was poorly publicised. The second round, issued in June 2019, was more open and transparent but George believes that "green bonds can be further improved by mandating risk assessments be included in the investment plans."

Innovation and flexibility with regards to climate governance in Nigeria is not just limited to securing funding. In 2017, House of Representatives member and Chair of the House Committee on Climate Change, Samuel Onuigbo, introduced the Framework for Climate Change Bill. It aimed to set up an agency on climate change with a technical leader committee drawn from at least 18 ministries. Nigeria's President Buhari refused to assent to the

bill when it was presented to him, over concerns that it replicates the DCC, but activists hope that it will be re-introduced. Whilst Nigerians may be wary of adding yet another agency to the already bloated federal government, its backers say having an agency with its own budget, could improve transparency around how climate funds are being spent and increase the country's ability to access funding mechanisms.

Whether or not Nigeria ends up with a new agency dedicated to climate change, the country will have to build its capacity to coordinate between national and sub-national government, as well as across different ministries, for effective climate action. This, in a country with several different policy documents from different federal ministries addressing climate change, could be the real milestone the country needs to push past its inertia on addressing climate resilience.

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Fighting climate change in the Sahel: the role for indigenous peoples

The Sahel is one of the regions of the world most affected by climate change. In the last decade, many areas have experienced major floods, followed by periods of intense drought. In places like Chad, temperature records have been broken with heatwaves that have devastating consequences for people and the agricultural sector they depend on. Our elders tell us that they have never known or experienced these extremes before.

Indigenous pastoralist “Mbororo” Fulani who can be found across Chad, Niger, Nigeria, Cameroon and Central African Republic, are on the frontline of this changing climate. For over a century, they have lived in harmony with their environment, moving from place to place according to the season, in the search for water and pasture for their large herds of cattle. However, this nomadic and semi-nomadic existence is becoming more difficult with fewer pastures and freshwater sources because of the changing climate.

When I was a child, I was living in a community in Darussalam, in the south-west of Chad. We were used to milking our cows twice a day and had plenty surplus to sell at the market. But today, things are vastly different. My uncle and cousins are now forced to milk only once every two days, because there is not enough food and water for the cattle. With the milk volume production a quarter of what it once was and hence income from the selling of surplus drying up, food insecurity is becoming a concern for pastoralist communities in a region which is being deeply affected by the breakdown of its fragile ecosystem. It is a concern shared by the wider inhabitants of the Sahel, 80% of whom live in rural areas where agriculture is the mainstay of the economy.



The World Health Organization estimates that there are just five hospital beds for every 10,000 people in the region.

Climate change consequences

Changes to the rhythm of the seasons is reducing agricultural production. New plant and animal diseases are appearing, and locust swarms are more frequent, destroying crops that are essential for families and communities. All of this has led to widespread food insecurity in the region, where most people depend on subsistence farming, according to a 2019 report by the Intergovernmental Panel on Climate Change (IPCC).

The Sahel already had many vulnerable inhabitants. Unchecked, climate change will make life even harder for those no longer able to grow produce in volumes that allows them to have a small surplus which they can sell in the market. Without this income, families will not be able to pay school fees or to access health services where they are available. According to a Global Partnership study about 50% of children are out of school in the Sahel, with that number increasing to 90% for indigenous peoples. The World Health Organization estimates that there are just five hospital beds for every 10,000 people in the region. Given this reality, rural communities and indigenous peoples have historically relied on nature to provide treatment for ailments and to educate the next generation about the workings of the fragile eco-system in which they live. But with climate change altering the world around them, their ability to continue to do so is also being tested.

Shrinking natural resources have also led to conflicts between farmers, cattle herders and fishermen over access to water and fertile land. Until recently they had, for the most part, lived in harmony with each other and with nature; collaborating to maintain the delicate balance of the key ecosystems. Pastoralist herds fertilised the fields of farmers, who, in return, were able to share some cereal and plants that could feed cattle. But this balance is now broken.

Over the last few years, the Sahel has become the playground for traffickers, smugglers and terror groups that have instrumentalised the scarce resources to exacerbate tensions between communities. In Mali, Burkina Faso and Nigeria, terrorist groups have taken advantage of the tensions and the growing poverty to recruit new members by offering cash or threatening family members. As the impacts of climate change hit harder, the risk of more entrenched conflict will also grow.

For those seeking to avoid conflict and find an alternative source of income to support their families, migration to urban areas offers a way out. As the impacts of climate change reduce the productivity of farming and pastoralists, more and more men, traditionally the providers for the family, are leaving their communities to try and find a job in cities to earn enough money to send back to their families. Climate migrants are one of the major drivers of internal migration to large urban areas in the region.

Leveraging local knowledge

The main responsibility for ensuring the targets of the Paris Agreement on Climate Change, which includes limiting the increase of global temperatures to 1.5°C, lies with leading global economies. Sahelian countries produce less than 1% of the world emissions of greenhouse gases, whilst over 80% are emitted by the G20. But Sahelian countries and communities can also play a part given the risks climate change poses to the way of life in the region.

In the Sahel there are many examples of communities developing strategies to adapt to the consequences of climate change, to reduce pollution and to protect natural ecosystems. These solutions are implemented at the local level by communities and indigenous peoples with generational knowledge of living in harmony with nature. Indigenous peoples seasonal weather forecasts – that rely on observing the seasonal migration of birds, the presence of insects and cloud observation – are some of the most accurate in the world. This knowledge can help inform climate adaptation strategies of farmers and fishermen by anticipating elongated dry spells, enabling them to plant more drought resilient crops or plants. Here again indigenous knowledge of local fauna can help identify these varieties.

Fulani nomadic and semi-nomadic communities also have a precise knowledge of all the fresh water sources that provide water even in the worst droughts. This knowledge can be used to provide adaptation solutions for farmers and pastoralists alike through participatory mapping approaches that bring communities together to learn from one and other. Dialogue to document how they have changed over time can contribute to their sustainable management in the future. As local authorities can protect them based on the knowledge and experiences of those who use them for their daily needs. Furthermore, these sorts of dialogues and collaborations can help build trust and decreases misunderstandings and tensions linked to water, forest or land access.

Indigenous communities are contributing to mitigating emissions by protecting these ecosystems. As disclosed by the IPCC's special report on land, well-functioning ecosystems can contribute to about one third of the global mitigation effort needed to meet the Paris objectives. The way of life of nomadic pastoralists in the Sahel, moving from one place to another, following the rhythm of seasons, gives space to nature to regenerate. And what is true for us, is true in many regions of the world. Indigenous peoples are protectors of the planet and guardians of peace and stability between nature and people.

GO GREEN

There is still time to act to limit the impact of climate change, and the people of the Sahel have many solutions. But they cannot do it alone. International donors, together with national governments should develop, fund and execute a green deal for the Sahel, to help rural communities in their fight against climate change. Initiatives such as the Green Great Wall and a focus on agroecology and renewable energies will be key. So too is respect for indigenous people's rights. These efforts, combined with substantive progress in the next round of global climate talks in the UK in 2021, can make a difference for millions of people living an increasingly precarious existence and ensure that nature is protected for all, now, and in the future.

Hindou Oumarou Ibrahim is the coordinator of the Indigenous Women and Peoples Association of Chad and United Nations Sustainable Development Goals advocate.

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How climate change is undermining peace and security in Nigeria

In October 2018, the Intergovernmental Panel on Climate Change warned global policymakers of the need to cut emissions by 45% before 2030 to restrict global warming to 1.5°C. Although a rise above 1.5°C is the point where the consequence of global warming are expected to become increasingly severe and more difficult and expensive to mitigate, the world is already witnessing catastrophic natural disasters such as record-breaking high temperatures, extreme wildfires, melting glaciers, flooding and drought.

Despite the country's low contribution to greenhouse gas emission and global warming, Nigeria is one of the most vulnerable countries in the world to climate change-related extreme weather conditions and natural disasters. The impacts are exacerbated by rapid population growth, a fragile economy, high dependence on rainfed agriculture and the country's weak adaptive capacity.

Unseasonal and high temperatures and rainfalls, severe flooding and desertification are overlapping with socioeconomic stressors to further deteriorate livelihoods, economic opportunities and increase competition over natural and environmental resources, which in turn has amplified social tension and a vicious cycle of conflicts.





35%

OF THE COUNTRY'S LAND AREA IN ELEVEN
DESERTIFICATION FRONTLINE STATES

**Bauchi, Borno, Gombe, Jigawa,
Kano, Kebbi, Kaduna, Sokoto,
Yobe, Adamawa, and Zamfara.**

The desertification front lines

Northern Nigeria has a tradition of, mostly, Fulani cattle herders migrating across the lush grasslands and savannahs. However, this movement of people and livestock has taken a deadly turn in the last decade with violent conflicts between herders and farming communities an increasingly common occurrence. A lot has been written about the violent attacks on farming and herder communities in the middle-belt, but not so much about the situation in the north-west. According to the International Crisis Group, the conflict between Hausa farmers and Fulani herders in the region has killed at least 8,000 people since 2011 and displaced more than 200,000 into the neighbouring Niger Republic.

Nigeria's Federal Ministry of Environment says desertification, worsened by the dual impact of climate change and unsustainable human activities such as overgrazing and tree felling for fuel and farming, is threatening 35% of the country's land area in eleven desertification frontline states - Bauchi, Borno, Gombe, Jigawa, Kano, Kebbi, Kaduna, Sokoto, Yobe, Adamawa, and Zamfara. With the impacts contributing to migration and conflicts over dwindling resources.

Weak governance and an overburdened justice system are also contributing to the violence. The region is awash with undocumented small arms which are used not only by criminals but the multiple militias and vigilante groups that operate in an environment where law enforcement is weak or non-existent. Kidnappings, looting, rape and arson happen regularly - as do revenge killings.

On 6 June, farmers cultivating their farmlands in Yar Gamji village, Batsari Local Government Area (LGA), Katsina State, were attacked by a group of nomadic herder allied militants on motorcycles. At least 30 people were killed in the incident. These violent crimes have undermined peace efforts, but violent clashes are also being sustained by a lack of alternative livelihood opportunities for young herders and farmers due to educational deficits and the growing impact of climate change.

Climate change, poverty and conflict are intertwined in the Lake Chad region. Although Borno State, the epicentre of the decade-long Boko Haram insurgency, was excluded from the National Bureau of Statistics 2019 report on poverty and living standards due to security concerns that made data collection unfeasible, Adamawa and Yobe states were ranked among the poorest states in the report. The region also bears the brunt of increasing temperatures and erratic rainfall which is having an impact on agriculture.

Desertification and the historical decline of Lake Chad and its wetlands have also impacted the local economy negatively. Although the lake itself has grown to 14,00 square kilometres in the past two decades and remains relatively stable in its southern pool, it is still recovering from a period of severe drought in the 1970s and 1980s when it shrunk from 25,000 square kilometres to just 2,000. The increased economic vulnerability of these communities has made young people more susceptible to being recruited to Boko Haram and its splinter group the Islamic State in West Africa.

A green wall?

In September 2019, Nigeria's President Muhammadu Buhari announced plans to build a climate-resilient future and committed Nigeria to fulfil its Nationally Determined Contributions made under the Paris Agreement to reduce national emissions. Key aspects of the country's resilient future plan are the development of a green wall shelterbelt, the introduction of climate-smart agriculture practices and a commitment to Lake Chad ecological restoration.



The green wall, covering 1500 km from Arewa Dandi LGA, Kebbi State to Abadam LGA, Borno State is designed to restore degraded land, improve the availability of environmental resources and contribute to the country's carbon capture and storage. Conditions that will improve livelihood opportunities and that can go some way to addressing the perennial violence between nomadic herders and farming communities. This was also part of the thinking behind the Federal Ministry of Agriculture and Rural Development's unveiling, in June 2019, of plans to create rural grazing area (RUGA) settlements.

The Miyetti Allah Cattle Breeders Association of Nigeria - the most organised and influential herder advocacy group - endorsed the plan to settle herders and their cattle herds in an organised environment with adequate basic amenities. The settlements are to provide schools, veterinary clinics, mini ruminant feed mills, water points, grazing land and manufacturing entities that will process and add value to by-products. Despite the suspension of the federal RUGA plan in July 2019 - after

resistance from many states and a public backlash over fears that its true motive was a land grab by influential politicians to favour the Fulani ethnic group - two states have pressed ahead with their own plans.

In Niger State, about 30,000 hectares of land in Bobi Grazing Reserve in LGA has been set aside. While in Zamfara, the government is investing in RUGA settlements in Maradun LGA as part of its 'soft approach' to ending the violence. It remains too early to comment on whether the approach is having a discernible impact.

For farmers, under pressure from unpredictable weather conditions, access to timely weather information will improve crop production and is one part of the government's effort to introduce climate-smart agriculture practices. Crop diversification, including using more drought resilient crops, and redesigns to farmland to maximize productivity and protect the soil in the face of increasingly severe and frequent droughts are also being supported.

In north-eastern Nigeria, the United Nations Food and Agriculture Organization, in partnership with the government, is promoting the adoption of climate smart agriculture techniques in conflict-affected states of Adamawa, Borno and Yobe to make livelihoods

of farmers more sustainable in the face of changing climate. However, greater private sector and government investment is required to improve access to modern farming innovations.

Finally, the Lake Chad Replenishment project, an ambitious inter-basin water transfer proposal to channel water from the Ubangi river in the Democratic Republic of Congo to the Chari River system that feeds Lake Chad, is expected to protect the lake from some of the effects of climate change. This, in turn, should keep local industries buoyant and address some of the wider socio-economic enablers of conflict in the region. But the replenishment project runs contrary to recent hydrological findings that suggested the lake is not actually shrinking. It also fails to put sufficient emphasis on addressing decades of poor governance and resource accessibility challenges around the water source.

For now, the negative effects of climate change, environmental degradation and weak governance will continue to increase the risk of conflicts, while exacerbating existing ones. Only with more sustainable, climate-sensitive development and environmental management can the limited natural resources, a driver of various conflicts, be preserved. Doing so will offer more fertile ground on which peace and security can be built.



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Reclaiming Lagos and its wetlands

With a coastline of 180km, the city of Lagos's strategic geographical location has been a key driver of its economic growth. It is not just Nigeria's major commercial centre, but a regional and continental hub. This economic prosperity has contributed to a significant increase in population which is now estimated at 20 million. The city expanded by about 73% between 1985 and 2014 as both individuals and the Lagos State Government sought to accommodate the growing population. But in doing so they have encroached on inland wetlands, swamps, and mangroves that had historically served as natural buffers against excess floodwaters. Inland and coastal wetlands have decreased by 38% in the same period, according to a study by academics at Covenant University in Ogun State.



Frequent flooding

Lagos is set to be the 15th most exposed city to coastal flooding by 2070 according to a 2007 Organisation for Economic Co-operation and Development study. 70% of residents live in unplanned settlements, many of which are vulnerable to flooding. In June 2012 Lagos recorded its worst flooding in terms of loss of life and property after 78% of the state's average monthly rainfall fell in one day. According to a post-disaster assessment by Nigeria's National Emergency Management Agency, 365 people died, 5,851 were injured, and over 3.5 million displaced. Recent research by the Internal Displacement Monitoring Centre (IDMC) suggests that this may be the new normal, not just in Lagos, but across Nigeria. The IDMC is predicting over 200,000 Nigerians will be displaced by floods each year across the

In March 2020, Tunji Bello, the Lagos State Commissioner for Environment and Water Resources warned that the city was expecting 250-270 days of rainfall and that flooding would be a part of life for some areas of the city for much of the year. On the 24 May residents of the Ifako-Ijaiye Local Government Area (LGA) were forced out of their homes after flooding in their communities. In June, the Lagos State Emergency Management Agency recorded 12 families displaced at Orile-Agege in Ikeja LGA because of floodwaters. While increasing rainfall and the destruction of the city's natural defences are key factors in the increased flooding, research by academics at the Ladoke Akintola University of Technology argues that poor drainage structures and waste ma



Shifting sands

In 2005, a major flood at the shoreline of Victoria Island resulted in damage to road infrastructure, homes, businesses and the loss of its protective beach. The urgent need for a solution birthed the initiative to create a buffer. The Great Wall of Lagos evolved into a 10km² land reclamation project, Eko Atlantic City: one of the first multi-billion-dollar flood adaptive projects under private-public partnership in Lagos. While Eko Atlantic City is designed to ensure climate resilience, the adverse impacts of the sand filling required to reclaim the land has disrupted the natural flow of the ocean. As higher tidal waves get closer to the shoreline, the water is pushed in the direction of surrounding, less climate resilient communities. Stormwater surges, unable to penetrate the 'great wall', instead find vulnerable or low spots along the shoreline, with devastating consequences.

Once a place for relaxation and tourism along the shoreline, Kuramo is one of the communities that has borne the brunt of stormwater surges in recent years. In August 2012, 16 people were killed, and more than 1,500 residents displaced after houses and businesses were destroyed by high tides. Other coastal communities such as Akodo,



Alpha, Kaiyetoro, and Golden Estate have also been affected. In 2012, the Commissioner for Waterfront Infrastructure attributed these surges to nature, but social and environmental activists have pointed the finger of blame at Eko Atlantic City's land reclamation efforts. In a discussion on the environmental impact of Eko Atlantic, Ako Amadi, a marine biologist stated that the environmental impact assessment submitted on the dredging activities barely mentioned safety issues, did not go into the forensics of its climate change impact, nor did it offer any palliatives should environmental disasters occur in the future.

Eko Atlantic City is not the first and will likely not be the last project looking to expand the city into the ocean. Lagos has a history of sand-filling to reclaim land for residential development. Dolphin Estate in Eti-Osa LGA, for example, was built largely on reclaimed wetlands in the 1990s. But the city's continued encroachment towards the sea, and impacts that may have on its climate resilience, is not just driven by large-scale developments. Informal communities on the coast, some having been forcibly evicted from areas they have lived for decades, are also expanding into surrounding wetlands, further escalating the risk of flooding.

The state response

The State Government has developed and implemented policy guidelines and adaptation strategies to drive climate resilience in Lagos. Model City Master Plans were produced between 2011-2013 for Lagos Mainland Central, Lekki and Alimosho and a Climate Change Policy 2012 and the 2018 Lagos Resilience Strategy were developed in response to the predictions of increasing rainfall and rising sea levels. The Lagos Resilience Strategy, implemented by the Lagos State Resilience Office, aims to create an efficient, inclusive and enterprise-driven city. Flood management strategies include community participatory flood management and promoting sustainable waterfront tourism to improve livelihoods for coastal communities. The demolition of buildings encroaching into flood plains to maintain a 50-250m coastal buffer zone, replanting of mangroves and implementation of protection measures for natural spaces are also being supported by the state.

However, inadequate funding, a lack of monitoring and ineffective enforcement of laws and regulations continue to inhibit the implementation of some of these approaches. Agencies like the Lagos State Building Control Agency need to proactively enforce development controls and monitor the implementation of approved plans for changes to be realised. For now, there remains a perception, based on recent actions, that repercussions regarding unapproved development on flood plains seem to be targeted at low-income communities, whilst wealthier investors and developers are unchecked by the laws and guidelines.

Wetland protection

Moving forward, climate change solutions need to consider the overall effects of the city's development on the environment. Preserving and protecting wetlands should be a critical part of Lagos's climate change adaptation solutions. To do this, communities must be engaged and educated, not dictated to, so that they feel ownership of such initiatives. Many residents of



informal settlements believe that the government has the sole responsibility of finding a solution to the issue of flooding. This mentality is partially to blame for their failure to comply with environmental laws, regulations or to adhere to weather warnings.

In the Santa Rosa Municipality of Ecuador opportunities for economic activities like fishing and cultural activities that conserve the wetlands have been created. The Okavango delta in Botswana and Black river swamps in Jamaica draw in large numbers of tourists because of their rich biodiversity. Each country focused on creating funds for conservation, partnerships with communities, and opportunities for community-based activities on wetlands. Lagos

State can look to learn from these examples, whilst adapting them to meet the Nigerian context.

In 2015, an effort to restore the wetlands in Niger Delta by Shell, in partnership with the Living Earth Nigeria Foundation and Nigeria Conservation Foundation, encouraged communities to adopt more sustainable livelihood practices aimed at conserving the environment in exchange for micro-credits. This type of community reward system, delivered in partnership with the private sector, could be one direction to explore, as part of Lagos's wider climate resilience strategy.

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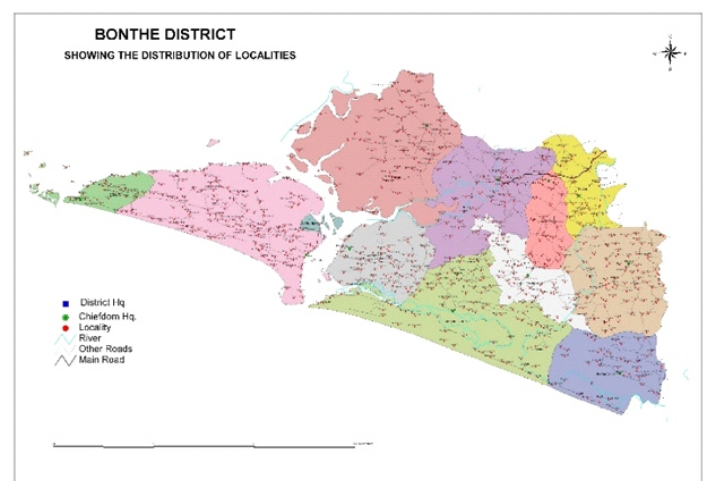


Bonthe Island: Has the impact of climate change reached her shores?

Over the last decade, global discussions about climate change have grown in prominence. Sierra Leone, like many other countries in the world faces, and continues to grapple with, the threats posed by changes in global climate systems and the negative effects it can have on local weather conditions. Challenges that are being exacerbated by human activities. In the past, everywhere in Sierra Leone experienced six months of dry conditions and six months of rains. Nowadays, the length of the rainy season has decreased but the intensity of the rain has increased significantly. This has increased the risk of flooding in many parts of the country.

Sierra Leone is rated by global risk consultancy Verisk Maplecroft among the most vulnerable nations to climate change and one that is likely to be most affected by climatic disasters. Such impacts are expected to be most seriously felt in coastal areas. While there is no specific projections of climate change for coastal parts of

the country, nationwide projections suggest that in the long term, the country will experience an overall increase in temperature of between 1.5°C and 4°C and a probable increase in rainfall. Although it is not clear exactly what impacts these changing conditions will have on coastal communities and their ecosystems it can be said with some certainty that it will make inhabitants more vulnerable.





Island life under threat?

Bonthe Island, in the southern region of Sierra Leone, is separated from mainland Sierra Leone by the Bonthe-Sherbro River estuary which divides Bonthe district. The river receives high volumes of discharge from the Kittam, Jong and Waanje rivers that have exposed most of the low-lying coastal communities on the island to flash floods. Bonthe city, the district headquarters, and the only urban settlement on the island, is a place of historical significance in Sierra Leone. It was a prosperous trading hub for slaves and merchandise before it was transformed by the British colonisers into a post for fighting the slave trade in the early nineteenth century.

Its strategic location – it is surrounded for the most part by the Atlantic Ocean – and natural resources meant that the city was declared by the colonial government as Sierra Leone's second municipality after Freetown. However, since independence, the city has slowly lost its former glory partly because of the waning economic opportunities that it previously offered. According to the 2015 national population and housing census, Bonthe district is among the least populous districts in Sierra Leone, with just over 200,000 inhabitants. The district endures

high levels of unemployment owing to its lack of services, distanced location from the capital Freetown and chronic underinvestment by successive governments since the country gained independence. The main sources of livelihood – subsistence farming and artisanal fishing – are under threat from climate change.

With much of its population settled along the coast, changing weather conditions will have a significant impact on the habitat and livelihoods of Bonthe Island residents. Strong winds are particularly feared because they can cause fires by fanning flames in the sheds used for smoking fish. These fires can spread onto thatch houses – the most common type of rural dwelling – and destroy whole settlements. Storms can also fell trees and branches, unroof houses and overturn fishing and passenger boats leading to loss of life and property.

While flooding has historically been a feature of life, it is growing more frequent, becoming more severe and causing more damage. On 24 June 2011, a considerable section of Bonthe district was flooded by torrential rain which caused significant damage to properties in Bonthe city and in over fifty villages situated on both sides of

the Bonthe-Sherbro River estuary. On both the island and mainland, there was significant disruption to the livelihoods and wellbeing of people. The flood overwhelmed the response capacity of the local council and the water did not recede for several weeks, placing even more stress on families and communities living hand to mouth.

Acting City Mayor at the time, Emmanuel Deod, described the flood as worrisome and expressed a belief that it was a result of increasingly intense rainfall which he linked to perceived changes in weather patterns. He also associated it with observable rises in sea levels and the poor drainage system in the city. However, several residents disagreed. They believed that the flooding was aided in part by the absence of a retaining wall along the coastline and the accumulated silt along the sea face which caused the rising water levels to invade coastal settlements.

Apart from training residents on disaster risk reduction techniques, including preparing the communities to respond to disaster, little was done to address these concerns and floods again engulfed the city in 2015. Much needed plans to construct a new seaport complex on the island as part of Julius Maada Bio's Presidential Infrastructure Initiative were announced in 2019 and could help to minimise flooding risks and the associated damages once built.

Beyond its immediate impacts flooding in Bonthe

has caused longer term sanitation problems with the water penetrating bore holes and water wells used for drinking water. It has also washed away loose soil, degrading fertile agricultural land on which many residents depend. With changes to climatic conditions, these events are set to intensify and become more frequent in the coming decades. But human activity is also damaging the fragile eco-system.

Off-grid energy sources, particularly charcoal for cooking, are a mainstay for most residents of Bonthe Island due to a lack of electricity. Fishermen predominantly use indigenous practices for processing fish which involves smoking it on open grills - locally known as banda. The wood used to smoke the fish is mostly harvested from coastal mangroves. Whilst cultivation of the mangroves has been practiced for decades in Bonthe, there are concerns that the growing population, combined with increased commercial interest in *Rhizophora racemose* and the trees limited prospects for regeneration and sustainability, are putting extreme pressure on a finite resource. Forest cover is similarly exploited for firewood, as poles for housing construction and for making household furniture. This cutting down of mangroves and trees for firewood not only affects the biodiversity of the island but further exposes much of the coastal areas to erosion. With the erosion of the coastal lands further impacted by flooding, storm surges and tidal effects associated with the changing climate, this problem is only getting worse.





Time for action

As Sierra Leone continues to experience unusually severe weather events, settlements in coastal locations, like Bonthe Island, are often at greater risk. Intense and heavy rainfall, strong winds and recurrent flooding is already affecting not just the habitat but resident's wellbeing and means of livelihood. On Bonthe Island there are growing concerns that fish stocks are declining and that the continuous damage caused to the vegetative cover and the sea front will worsen flooding in the future. While there is limited data to steer actions, the signs of a change in climate are clear.

Some quick wins can be obtained if the municipal council, works jointly with the Disaster Management Department and the local population, to identify areas that are particularly vulnerable to flooding. With this information it can prepare evacuation plans for residents; limit development on lands that are prone to disaster risks; and create an early warning system to alert residents about imminent hazards. In the longer-term continuous work to improve the knowledge and prevention strategies of local communities should be ongoing. Neglected for too long, Bonthe must be an integral part of the governments efforts to tackle climate change in Sierra Leone.

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