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Left Behind: Funding Climate Action in the Global South

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LEFT BEHIND: FUNDING CLIMATE ACTION IN THE GLOBAL SOUTH

by: Chinonso Anozie*

ABSTRACT

Global clean energy transition envisions zero greenhouse gas emissions by 2050, as set by the United Nations. Consequentially, developed economies have made giant strides in reducing greenhouse gas emissions and achieving full decarbonization. However, the opposite remains true in the Global South, lagging in financing its climate action. Despite being disproportionately impacted by climate change, financial efforts by developed economies and the Global South have failed in placing the latter's countries at par with clean energy investments of developed countries. Absent adequate financing of climate action in the Global South, the net zero goal will be nothing but a mirage.

This Article contends that financial incapacity to finance climate change has left the Global South behind in the global energy transition movement and, if left unchecked, will sabotage global energy transition efforts. Using Africa as a case study, this Article explores the need to develop realistic financing options for global energy transition in the region. This Article recognizes that financing climate change is expensive and much more strenuous on African economies that barely have the fiscal infrastructure to finance the transition. It unpacks the extant climate financing avenues and the inherent challenges in attracting climate finance in Africa and argues for improvements.

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I. INTRODUCTION

“We must act now and wake up to our moral obligations. The poor and vulnerable are members of God’s family and are the most severely affected by droughts, high temperatures, the flooding of coastal cities, and more severe and unpredictable weather events resulting from climate change. We, who should have been responsible stewards preserving our vulnerable, fragile planet home, have been wantonly wasteful through our reckless consumerism, devouring irreplaceable natural resources.”

–Archbishop Desmond Tutu¹

Rising sea levels are swallowing up homes in the Niger Delta region in Nigeria and leaving families without shelter.² Devastating floods are ravaging sub-Saharan Africa.³ Recent floods killed 603 people,⁴ destroyed schools, health care centers, and farmlands, and displaced millions of people from their homes.⁵ The Nigerian minister of water resources blamed the flooding on increased rainfall in the country, causing River Benue’s tributaries to overflow.⁶ Scientists agree that increased rainfall is one of the effects of climate change.⁷

1. Archbishop Desmond Tutu, *Foreword to THE GREEN BIBLE I-13* (2008).

2. Habibat Raheem, *Nigeria’s Homes are Vanishing into the Sea from Climate Change*, REUTERS (June 22, 2022, 8:30 AM), <https://www.reuters.com/business/environment/nigerias-homes-are-vanishing-into-sea-climate-change-2022-06-22/> [<https://perma.cc/BT8Y-SB8R>].

3. Amudalat Ajasa, *Climate Change Made Deadly Floods in West Africa 80 Times More Likely*, WASH. POST (Nov. 16, 2022, 5:04 PM), <https://www.washingtonpost.com/climate-environment/2022/11/16/nigeria-floods-climate-change-attribution> [<https://perma.cc/DK9B-7JM8>].

4. Ruth Maclean, *Nigeria Floods Kill Hundreds and Displace Over a Million*, N.Y. TIMES (Oct. 17, 2022), <https://www.nytimes.com/2022/10/17/world/africa/nigeria-floods.html> [<https://perma.cc/5M53-ACCB>]; see also Ajasa, *supra* note 3.

5. Ajasa, *supra* note 3; Abubaker Ahmadu Maishanu, *Flood Ravages 257 Health Facilities, Schools in Jigawa as UNICEF, Lawmakers Announce N280 Million Support*, PREMIUM TIMES (Oct. 17, 2022), <https://www.premiumtimesng.com/news/headlines/560037-flood-ravages-257-health-facilities-schools-in-jigawa-as-unicef-lawmakers-announce-n280-million-support.html> [<https://perma.cc/TZ7J-PRP5>].

6. Ngozi Okpalakunne, *Rainfall, Not Cameroon Responsible for Nigeria’s Floods – Minister*, BUS. DAY (Oct. 21, 2022), <https://businessday.ng/news/article/rainfall-not-cameroon-responsible-for-nigerias-floods-minister/> [<https://perma.cc/6KC6-JZL7>].

7. Matthias Schmale, Remarks on UN/Nigeria Humanitarian Situation (Oct. 13, 2022), <https://www.unmultimedia.org/tv/unifeed/asset/2954/2954822/> [<https://perma.cc/PNH3-4XTX>]; see also *Climate Change Indicators: Heavy Precipitation*, ENV’T PROT. AGENCY,

Reducing climate change impacts in the Global South⁸ is essential, but the dearth of financial resources hampers the Global South's ability to fight climate change. In contrast to other regions with massive investments to fight climate change impacts, it has been challenging for the Global South, mainly comprised of less economically developed economies, to build financial muscle or attract private investments in clean energy projects, mitigation, and adaptation efforts.⁹

This Article contends that financial incapacity to fight climate change has left the Global South behind in the global energy transition movement and, if left unchecked, will sabotage the global energy transition effort. It argues that the Global South's social and physical vulnerabilities further elevate the region's susceptibility to climate change and thus support accelerated efforts to reverse the trend. It makes the case that an innovative approach towards closing the climate financing chasm in the Global South will reverse the current trend and get the region back on track.

Climate change finance has largely ignored the Global South. Because the idea over time has been to invest in climate change mitigation in countries with high emitting standards, countries in the Global South, which have historically lower emissions, have received less attention. However, that notion ignores Africa's potential for exponential industrial revolution and economic growth, which arguably will increase carbon emissions.¹⁰ It equally ignores rising CO₂ per capita occasioned by "rapid increases in population," higher income, and urbanization.¹¹ And peradventure, if African countries were to achieve "middle income

(July 21, 2023), <https://www.epa.gov/climate-indicators/climate-change-indicators-heavy-precipitation> [<https://perma.cc/85CR-A4FV>].

8. "The phrase 'Global South' refers broadly to the regions of Latin America, Asia, Africa, and Oceania. It is one of a family of terms, including 'Third World' and 'Periphery,' that denote regions outside Europe and North America, mostly (though not all) low-income and often politically or culturally marginalized." Nour Dados & Raewyn Connell, *The Global South*, 11 CONTEXTS, Winter 2012, at 12, <https://doi.org/10.1177/1536504212436479>.

9. Compare Justin Badlam et al., *The Inflation Reduction Act: Here's What's in It*, MCKINSEY & Co. (Oct. 24, 2022), <https://www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it> [<https://perma.cc/2ANB-TP4R>] (showing that the Inflation Reduction Act budgeted almost \$400 billion towards decarbonization, clean energy, and fighting climate change impacts in the United States), with *Africa Faces Both Major Challenges and Huge Opportunities as It Transitions to Clean Energy*, INT'L ENERGY AGENCY (Mar. 23, 2022), <https://www.iea.org/news/africa-faces-both-major-challenges-and-huge-opportunities-as-it-transitions-to-clean-energy> [<https://perma.cc/Y3Q8-DSBT>] (discussing the challenges and opportunities associated with clean energy projects in Africa).

10. See Njuguna Ndung'u & Landry Signé, *Capturing the Fourth Industrial Revolution*, in FORESIGHT AFRICA: TOP PRIORITIES FOR THE CONTINENT 2020–2030, at 61–73 (Brahima S. Coulibaly ed., 2020), https://www.brookings.edu/wp-content/uploads/2020/01/ForesightAfrica2020_20200110.pdf [<https://perma.cc/RT3B-EPYH>] (describing Africa's economic and industrial growth potential).

11. Jack A. Goldstone, *The Battle for Earth's Climate Will Be Fought in Africa*, WILSON CTR. (Mar. 24, 2021), <https://www.wilsoncenter.org/article/battle-earths-climate-will-be-fought-africa> [<https://perma.cc/Q6XH-B7HV>].

status with a similar emission per capita as current middle income countries,” the global chances of meeting the net zero goals and limiting global warming to 1.5 degrees will be in danger.¹² The projection is that by 2060, Africa will experience significant CO₂ emissions increases that will offset a 60% reduction from current levels in China.¹³ The potential downsides of not addressing climate change in the region are enormous.

Ironically, fighting climate change in the Global South may conflict with its economic developmental initiatives. For a region battling energy poverty and economic inequalities, the debate is whether to apportion local resources toward achieving cheaper energy access with fossil fuels and economic empowerment and providing basic amenities for the region’s citizens, even if it means increasing greenhouse gas emissions. Investing in expensive green energy sources or using other means to address climate change could come at the expense of the aforementioned goals.

Using Africa as a case study, this Article examines the climate change effects in the Global South in Part II. It employs indices like water and food security, and health outcomes to highlight how climate change impacts the various sectors in Africa. This Article overlays the climate change effects in Africa onto its social, physical, and economic vulnerabilities. It demonstrates how those vulnerabilities exacerbate climate change’s impacts, underscoring the urgent need for financial resources to mitigate them.

Part III examines the climate finance needs in the region, extant climate finance sources, and the challenges in attracting climate finance there. It draws attention to the disparity between climate finance in the Global South and the Global North. It argues that the disparities and reluctance to fund the climate transition efforts in the Global South have left the region behind. This Article uses specific examples from some African countries to buttress the point. It explores the meager resources the region has gotten and how it pairs with other regions worldwide.

Part IV highlights the pathways to financing climate action in the Global South while balancing the mitigation and adaptation efforts across the region. It also examines deficiencies, points out where the financing options fail to deliver the required assistance, and proposes avenues to fill the gap. It makes a case for an innovative approach to financing that creatively delivers sustainable financing to the region to accelerate its energy transition movement.

12. Jack Kimani, *Africa’s Role in Decarbonizing the Planet*, CLIMATE CHAMPIONS (Nov. 7, 2022), <https://climatechampions.unfccc.int/africas-role-in-decarbonizing-the-planet/> [https://perma.cc/Z5DF-3BLA].

13. Goldstone, *supra* note 11.

II. IMPACTS OF CLIMATE CHANGE IN AFRICA

Climate change is “long-term shifts in temperatures and weather patterns.”¹⁴ The shifts could be artificial or natural, and the aggregate of both activities is warming the climate globally.¹⁵ Scientists, however, believe that natural activities alone do not account for the variations, but that human activities are a more dominant cause of global warming.¹⁶ Climate change impacts the environment, food supply, and migration and disproportionately affects economically disadvantaged people, most of whom are in the Global South. Record-breaking heat waves, prolonged droughts, torrential rainfalls, rising sea levels, melting polar ice, and storms, among others, are happening more frequently than they used to.¹⁷

In Africa, climate variability and social, economic, and physical vulnerabilities exacerbate climate change impacts.¹⁸ Issues like social status, gender, wealth, political power, and access and control over resources intersect to exacerbate climate change’s impact on Nigeria.¹⁹ Climate change’s ability to destabilize economies and countries cannot be overstated, as it occurs in many African countries.²⁰ The consequential impacts of climate change may lead to potential disruptions in local markets, heightened food insecurity, restricted economic growth, and greater risk for investors in the agricultural sector.²¹ Though the effects

14. *What Is Climate Change?*, UNITED NATIONS, <https://www.un.org/en/climate-change/what-is-climate-change> [<https://perma.cc/7UNS-8VYY>].

15. *Id.*

16. See ULRICH CUBASCH ET AL., *CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS* 121 (Thomas F. Stocker et al. eds., 2013) (stating that climate variations resulting from natural activities do not wholly account for climate change).

17. See Saleemul Huq & Mohamed Adow, *Climate Change Is Devastating the Global South*, ALJAZEERA (May 11, 2022), <https://www.aljazeera.com/opinions/2022/5/11/climate-change-is-devastating-the-global-south> [<https://perma.cc/ECE7-FQ8Q>]; see also Feargus O’Sullivan, *The World’s Fastest-Growing Cities Are Facing the Most Climate Risk*, BLOOMBERG (Feb. 28, 2022, 12:25 PM), <https://www.bloomberg.com/news/articles/2022-02-28/global-south-cities-face-dire-climate-impacts-un-report?srnd=citylab> [<https://perma.cc/RT8L-KX8E>]; *What is Climate Change?*, *supra* note 14.

18. See generally J. C. Nkomo et al., *The Impacts of Climate Change in Africa* 2–3 (July 2006) (unpublished final draft submitted to The Stern Review on The Economics of Climate Change), https://www.researchgate.net/profile/Anthony-Nyong/publication/253698396_The_Impacts_of_Climate_Change_in_Africa/links/5592b4dc08aed7453d4639e5/The-Impacts-of-Climate-Change-in-Africa.pdf?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uRG93bmxvYWQiLCJwYXV0IjoicHViGljYXRpb24ifX0 [<https://perma.cc/G4G6-HXCH>].

19. FED. MINISTRY OF ENV’T, ABUJA, NIGERIA’S NATIONALLY DETERMINED CONTRIBUTION 28 (2021), https://unfccc.int/sites/default/files/NDC/2022-06/NDC_File%20Amended%20_11222.pdf [<https://perma.cc/UH39-G6NA>].

20. *WMO: Climate Change in Africa Can Destabilize ‘Countries and Entire Regions’*, UNITED NATIONS NEWS (Sept. 8, 2022), <https://news.un.org/en/story/2022/09/1126221> [<https://perma.cc/V9SQ-AACT>].

21. Charles A. Ray, *The Impact of Climate Change on Africa’s Economies*, FOREIGN POL’Y RSCH. INST. (Oct. 29, 2021), <https://www.fpri.org/Article/2021/10/the-impact-of-climate-change-on-africas-economies> [<https://perma.cc/4WY8-DH7G>].

of climate change are nuanced from country to country and from region to region, there are parallels that run through the Global South like food and water insecurity, flooding, intense heat, and poor health outcomes.²² A potpourri of factors is responsible for Africa's susceptibility to climate change, and the convergence of these factors further weakens its resilience to climate change.²³

Scholars addressing the impacts of climate change focus on either bio-physical impact²⁴ or vulnerabilities.²⁵ Ziervogel et al. focused on physical impacts with an overview of the bio-physical impacts of climate change.²⁶ They noted that “[c]limate change poses a significant threat to South Africa’s water resources, food security, health, infrastructure, as well as its ecosystem services and biodiversity.”²⁷ They also captured cattle productivity, urban flood risk, and equitable water access as some of the impacts of climate change in Africa.²⁸ Criticizing this approach, Nkomo and his co-travelers opine that focusing on the physical impacts of climate change without addressing the socio-economic conditions that heighten vulnerabilities is “an exercise in futility.”²⁹

Africa represents a continent where the socio-economic impacts exacerbate climate change like no other.³⁰ Socio-economic vulnerabilities, limited adaptive capacity, exacerbation of desertification, and lack of infrastructure and resources are part of the vulnerabilities affecting Africa and intensifying climate change impacts.³¹ To understand the depth of the impacts of climate change, both the vulnerabilities and physical impacts must be considered together.

A. *Water Insecurity*

Water is life. Access to clean water is limited in many parts of Nigeria.³² Other parts of Africa suffer the same fate. However, climate change makes it worse. Africa is dealing with a complex issue of

22. See Landry Signé & Ahmadou Aly Mbaye, *Renewing Global Climate Change Action for Fragile and Developing Countries* 2, 7 (Brookings, Working Paper No. 179, 2022), https://www.brookings.edu/wp-content/uploads/2022/11/NOV-2022-Signe_Mbaye_FINAL-1.pdf [<https://perma.cc/5AFG-SY7F>].

23. Nkomo et al., *supra* note 18, at 2–3 (focusing on vulnerability and climate variability in Africa).

24. Gina Ziervogel et al., *Climate Change Impacts and Adaptation in South Africa*, 5 *WIREs CLIMATE CHANGE* 605, 614, <https://doi.org/10.1002/wcc.295>.

25. See Nkomo et al., *supra* note 18, at 2–3 (focusing on vulnerability and climate variability in Africa).

26. Ziervogel et al., *supra* note 24, at 606.

27. *Id.*

28. *Id.* at 609–10.

29. Nkomo et al., *supra* note 18, at 9.

30. *Id.*

31. *Id.* at 2–3.

32. AARON SAYNE, UNITED STATES INSTITUTE OF PEACE, *CLIMATE CHANGE ADAPTATION AND CONFLICT IN NIGERIA* 4 (2011), https://www.usip.org/sites/default/files/Climate_Change_Nigeria.pdf [<https://perma.cc/5MRD-94HS>].

water scarcity both in institutional failure to provide water and physical scarcity of water caused by climate change.³³ A convergence of both worsens the problem of water scarcity.³⁴ A study projected that, due to climate change, Africa will experience decreased water availability in some regions and increased water availability in other regions.³⁵ While northern and southern Africa will witness reduced water runoff, southern Africa will see water shortages increase by about 29% by 2050 compared to the current value of 9%.³⁶ Nine countries in eastern and southern Africa will experience reduced water availability and stress.³⁷ Reduced water availability will also impact the Sudanese swamps, the largest swamps in Africa.³⁸

Another study also predicts that rises in sea level will result in salt-water intrusion into freshwater resources, impacting irrigation and water drinking sources.³⁹ Water shortages could affect the prevalent ecosystems within the Global South by disrupting the aquifer system and affecting wetlands and other habitats, including fish populations.⁴⁰ Climate change also impacts groundwater resources. Rising temperatures increase evaporation rates and reduce the availability of groundwater.⁴¹ Climate change also impacts groundwater recharge due to insufficient water “infiltrat[ing] the unsaturated zone to overcome evapotranspirative and tensive demands between land surface and water table.”⁴² Groundwater is necessary for drinking. Vulnerabilities like lack of access to clean drinking water further exacerbate water scarcity in Africa. In addition, institutional failures to provide safe drinking water in Africa further exacerbate the impacts of climate change.⁴³ Population explosion in Africa furthers the water scarcity conundrum.⁴⁴ WHO estimates that one in three African citizens lack access to clean water.⁴⁵

33. Khanyi Mlaba, *Water Scarcity in Africa: Everything You Need to Know*, GLOBAL CITIZEN (Feb. 1, 2022), <https://www.globalcitizen.org/en/content/water-scarcity-in-africa-explainer-what-to-know/> [<https://perma.cc/9G84-YN98>].

34. *Id.*

35. Nkomo et al., *supra* note 18, at 4.

36. *Id.* at 5.

37. *Id.*

38. *Id.*

39. Sam Earman & Michael Dettinger, *Potential Impacts of Climate Change on Groundwater Resources – A Global Review*, 2 J. WATER & CLIMATE CHANGE 213, 221–22 (2011), <https://doi.org/10.2166/wcc.2011.034>.

40. *Id.* at 213; Nkomo et al., *supra* note 18, at 3, 5.

41. Earman & Dettinger, *supra* note 39, at 216.

42. *Id.*

43. Efam Dovi, *Bringing Water to Africa's Poor, Expanded Access Requires More Funds, Efficiency and Capacity*, UNITED NATIONS: AFR. RENEWAL (Oct. 2007), <https://www.un.org/africarenewal/magazine/october-2007/bringing-water-africa%E2%80%99s-poor> [<https://perma.cc/328W-CYTN>].

44. Mlaba, *supra* note 33.

45. *Water*, WHO AFRICA, <https://www.afro.who.int/health-topics/water> [<https://perma.cc/8NUM-2NYK>].

Complex interactions between energy, water, and food impact water scarcity in the Global South.⁴⁶ The resources needed to improve energy access in the Global South may invariably intensify the impacts of water shortage. Building dams to generate hydroelectricity or control flooding negatively affects both wildlife within and around the river.⁴⁷ Hydropower turbines kill fish that pass through the turbines despite the heavy investment in technology designed to prevent this.⁴⁸ It has the potential to impact fishing populations for local communities in the Global South that rely on fish farming or hunting for survival.⁴⁹

On the other hand, hydropower generates cleaner energy for electrifying homes in the region.⁵⁰ In addition, provision food requires massive amounts of water for irrigation during the dry season.⁵¹ Devoting that water to crops affects availability of water in the region.

B. Food Insecurity

“Food security is the condition of a nation and its citizens having reasonable physical and economic access to sufficient and sustainable food.”⁵² Therefore, it is consequential to any developing nation, particularly in Africa, where agriculture is the mainstay of the economy⁵³ and the significant bulk of economic exports.⁵⁴ For context, agriculture (along with forestry and fishing) represents 17.3% of sub-Saharan Africa’s GDP.⁵⁵ For other countries in sub-Saharan Africa, the importance of agriculture varies widely, ranging from 57.45% of Sierra Leone’s economy and 1.68% of Djibouti’s.⁵⁶ Despite agriculture being the mainstay of many African economies, millions face food insecurity.⁵⁷ Therefore,

46. See Rhett B. Larson, *Reconciling Energy and Food Security*, 48 U. RICH. L. REV. 929, 932 (2014) (explaining that water, food, and energy intersect with sustainability, food production, and development).

47. *Hydropower Explained: Hydropower and the Environment*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/hydropower/hydropower-and-the-environment.php> [<https://perma.cc/BSA7-GVWY>] (Nov. 7, 2022).

48. *Id.*

49. CAMILLA TOULMIN, *CLIMATE CHANGE IN AFRICA* 61 (Alex De Waal & Richard Dowden eds., 2009).

50. *Id.* at 42.

51. Larson, *supra* note 46, at 934.

52. *Id.* at 929.

53. TOULMIN, *supra* note 49, at 50.

54. *Id.*; see also Doris Dokua Sasu, *Value of Agricultural Exports from Nigeria from 2018-2021*, STATISTA (Jan. 24, 2023), <https://www.statista.com/statistics/1298126/value-of-agricultural-exports-from-nigeria/> [<https://perma.cc/FL6Q-UCT4>] (stating that the total value of agriculture exports from Nigeria were valued at \$1.2 billion in 2021 and \$772.6 million in 2020).

55. *Agriculture, Forestry, and Fishing, Value Added (% of GDP)*, WORLD BANK, <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS> [<https://perma.cc/FE6G-GKS3>].

56. *Id.*

57. Press Release, United Nations Children’s Fund, 25 Million Nigerians at High Risk of Food Insecurity in 2023 (Jan. 16, 2023), <https://www.unicef.org/press-releases/25-million-nigerians-high-risk-food-insecurity-2023> [<https://perma.cc/N2E6-8L3H>].

any negative impact on the agricultural sector affects food availability, trickles down to the region's economic base, and substantially impacts subsistence farmers who rely on agriculture to cater to their families.

Climate change is doing just that in the African food security landscape as it violently disperses its impacts to various food sources and farmlands.⁵⁸ Global warming exacerbates flooding and causes frequent occurrences of natural disasters.⁵⁹ The potpourri of impacts of climate change exacerbates food insecurity in the Global South when Africa already suffers from a food production deficit.⁶⁰ Additionally, those impacts cause increased food prices, poverty, and climate migration of those fleeing from food insecurity.⁶¹

Sea level rise is no exception. In Equatorial East Africa, glaciers are receding on Mount Kenya, Mount Kilimanjaro, and the Rwenzori Mountains.⁶² Consistent sea level rise exposes low-lying and coastal areas to frequent flooding.⁶³ In Egypt alone, scientists estimate that a one-meter rise in sea levels will eliminate about 4,500 square kilometers of farmland.⁶⁴

The higher temperatures stress crops and speed up soil evaporation, reducing the value of rainstorms.⁶⁵ Overall, there is an expected reduction in rice production and rain-fed agriculture across Africa, especially in north Africa.⁶⁶ Aggregating harsh weather conditions, low technology adoption, and land productivity result in food insecurity and low yields in sub-Saharan Africa. The increase in temperature, especially in the summer, lowers agricultural yields.⁶⁷

Rainfall pattern models in Africa indicate varied results: droughts in northern and southern Africa, plentiful rain in east Africa, and unpredictability in west Africa with models forecasting anywhere from a 20% increase or decrease in rainfall.⁶⁸ For context, Nigeria has been

58. SAMUEL GODFREY & FARAI ANGELA TUNHUMA, UNITED NATIONS CHILDREN'S FUND, *THE CLIMATE CRISIS: CLIMATE CHANGE IMPACTS, TRENDS AND VULNERABILITIES OF CHILDREN IN SUB SAHARAN AFRICA* 24 (2020), <https://www.unicef.org/esa/media/7061/file/UNICEF-The-Climate-Crisis-2020.pdf> [<https://perma.cc/JP8L-PQBY>].

59. TOULMIN, *supra* note 49, at 33–34.

60. Nkomo et al., *supra* note 18, at 37.

61. *Id.* at 36.

62. *Id.* at 29; *see also* WORLD METEOROLOGICAL ORG., *STATE OF THE CLIMATE IN AFRICA: 2021*, at 15 (2022), <https://library.wmo.int/records/item/58070-state-of-the-climate-in-africa-2021> [<https://perma.cc/MC2E-YATE>] (stating that, between 2004 and 2016, the total glacial area on Mount Kenya decreased by 121,000 M²; an equivalent of approximately 44% of the mountain's ice coverage).

63. Nkomo et al., *supra* note 18, at 33–34.

64. TOULMIN, *supra* note 49, at 58.

65. *Id.* at 57.

66. *See id.* (reporting that climate change could lead to a 50% decrease in rain-fed agriculture and in Egypt, an 11% and 28% decrease in national production of rice and soybeans, respectively).

67. *Id.* at 56–57.

68. *Id.* at 57.

experiencing unprecedented flooding and rainfall.⁶⁹ The incessant rainfall causes flooding that destroys the ability to grow crops.⁷⁰ The increased flooding not only destroys crops but also forces people to leave their homes. In Nigeria, the 2012 floods affected 7 million people, displaced about 2.3 million Nigerians, and killed 363 people.⁷¹ Nigeria did not experience any other flooding as substantial in magnitude of the 2012 flooding until 2022.⁷² The implication is that uncertainty or variability makes it harder to predict when planning for the farming season to increase crop and agriculture yields.⁷³ Food is essential for nutrition and sustainable living.

Torrential rainfalls without adequate resilient infrastructure will result in flooding, affecting food crops and unpaved road systems prevalent in most African rural areas.⁷⁴ Local farmers travel the unpaved roads to transport their crops from the farms to the local markets to sell to exporters or bulk purchasers. Washing away unpaved roads makes it harder to transport food, raising the cost of food in the local markets.

C. Health Impacts

The impacts of climate change are not limited to water and food insecurity. They also affect the health and well-being of Africans. As this Article noted previously, climate change violently disperses its impacts,⁷⁵ so it is unsurprising to see how much it leads to lower health outcomes. Rising temperatures lead to increased incidents of heat stroke and heat waves.⁷⁶ In a region like the Global South, where 77% of the sub-Saharan African population lacks access to electricity,⁷⁷ this fact magnifies the impacts of rising temperatures and climate change. A study found that rising temperatures and extreme weather account for increased malnutrition and diarrhea in children.⁷⁸ The pathogens that cause diar-

69. See *supra* notes 2–6 and accompanying text.

70. See *supra* note 66 and accompanying text.

71. FED. MINISTRY OF ENV'T, ABUJA, *supra* note 19, at 10.

72. Maclean, *supra* note 4.

73. See TOULMIN, *supra* note 49, at 65–68 (discussing many climate-change factors that will lead to uncertainties for farmers).

74. Paul Collier et al., *Climate Change and Africa*, 24 OXFORD REV. ECON. POL'Y 337, 343 (2008), <https://doi.org/10.1093/oxrep/grn019>.

75. See *supra* note 58 and accompanying text.

76. *Heat Waves and Climate Change*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/content/heat-waves-and-climate-change/> [<https://perma.cc/8BX5-54VN>].

77. INT'L ENERGY AGENCY, *Access to Electricity*, in SDG7: DATA AND PROJECTIONS (2023), <https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity> [<https://perma.cc/F5JC-WSB8>].

78. Limin Wang et al., *The Health Impact of Extreme Weather Events in Sub-Sahara Africa* 3 (World Bank, Working Paper No. 4979, 2009), <https://papers.ssrn.com/sol3/Delivery.cfm/4979.pdf?abstractid=1428626&mirid=1&type=2> [<https://perma.cc/8YAF-V2EB>] (stating that extreme temperatures have affected children's health across sub-Saharan African countries).

rhea thrive in lower temperatures,⁷⁹ which some regions in Africa have been experiencing for a while. Excessive rainfall accounted for a 1.7% increase in weight-for-height malnutrition in children below age three.⁸⁰ Diarrhea is undoubtedly one of the leading causes of death for children under five and accounts for 484,000 deaths a year.⁸¹ In Africa, diarrhea was estimated to cause 760,000 out of 4.3 million deaths in children up to five years old in the year 2000.⁸² The fact that diarrhea is easily treatable and preventable and yet ravages the African continent lends credence to the social and economic vulnerability that exacerbates poor health outcomes in the Global South.

The lack of resilient physical and social infrastructure increases the impact of climate change on health outcomes. Citizens are unaware of preventive methods due to a lack of education. Further, the lack of proximate healthcare centers delays treatment for basic diseases.⁸³ These vulnerabilities are what climate adaptive measures in the region can reduce. The lower adaptive ability in developing countries necessitates adaptive investments to forestall the devastating impacts.⁸⁴

In addition to the other impacts of flooding, it increases vector-borne diseases like malaria.⁸⁵ Excessive rain results in slum water collection, which breeds diseases and epidemics like malaria.⁸⁶ Globally, malaria is responsible for 619,000 deaths with children accounting for 80% of deaths in Africa.⁸⁷ In addition, female *anopheles* mosquitoes are expanding their territories in Africa and moving to higher elevations due to climate change.⁸⁸ Because southern and western Africa are

79. Muluken Azage et al., *Effect of Climatic Variability on Childhood Diarrhea and Its High Risk Periods in Northwestern Parts of Ethiopia*, PLOS ONE, Oct. 2017, at 2, <https://doi.org/10.1371/journal.pone.0186933>.

80. Wang et al., *supra* note 78, at 12.

81. *Diarrhoea Remains a Leading Killer of Young Children, Despite the Availability of a Simple Treatment Solution*, UNITED NATIONS CHILDREN'S FUND DATA, <https://data.unicef.org/topic/child-health/diarrhoeal-disease/#data> [<https://perma.cc/HRD9-XKP5>] (Dec. 2022).

82. Cynthia Boschi-Pinto et al., *Diarrheal Diseases*, in DISEASE AND MORTALITY IN SUB-SAHARAN AFRICA 107, 111 (Dean T. Jamison et al. eds., 2d ed. 2006).

83. See Benjamin Anaemene, *Health and Diseases in Africa*, in THE DEVELOPMENT OF AFRICA 207, 218 (Olayinka Akanle & Jimí Olálékan Adésinà eds., 2017), https://doi.org/10.1007/978-3-319-66242-8_12 (noting more than 50% of Africans lack access to modern health facilities and 69.7% lack access in rural areas).

84. Thomas E. Downing et al., *Adapting to Climate Change in Africa*, 2 MITIGATION & ADAPTION STRATEGIES FOR GLOB. CHANGE 19, 20 (1997), <https://doi.org/10.1007/BF02437055>.

85. Apoorva Mandavilli, *How Climate Change Is Spreading Malaria in Africa*, N.Y. TIMES (Feb. 14, 2023), <https://www.nytimes.com/2023/02/14/health/malaria-mosquitoes-climate-change.html?smid=url-share> [<https://perma.cc/7KK3-N7VA>].

86. See Nkomo et al., *supra* note 18, at 5 (discussing how increases in precipitation due to climate change will lead to an increased incidence of malaria).

87. *Malaria*, WORLD HEALTH ORG. (Mar. 29, 2023), <https://www.who.int/news-room/fact-sheets/detail/malaria#:~:text=The%20estimated%20number%20of%20malaria,malaria%20deaths%20in%20the%20Region> [<https://perma.cc/Q7NV-DUUV>].

88. Colin J. Carlson et al., *Rapid Range Shifts in African Anopheles Mosquitoes Over the Last Century*, 19 BIOLOGY LETTERS, Feb. 2023, at 1, 4, <https://doi.org/10.1098>

experiencing higher temperatures, *anopheles* carrying plasmodium, the parasite responsible for transmitting malaria, are migrating towards cooler regions like east Africa.⁸⁹ Unsurprisingly, malaria is highly preventable with the elimination of slum water, but Africa is struggling with the prevention and eradication of the disease.

Climate change is an invasive phenomenon in people's lives, especially in Africa. Analyzing the impacts of the diseases against the existing vulnerabilities in the Global South like limited access to healthcare facilities, inadequate access to clean drinking water, and poor nutrition shows that they exacerbate the resultant effect and increase the likelihood of the recurrence of the diseases. For instance, land use change and alterations in regional climate in Africa increase incidents of seasonal epidemics like meningitis in northern Nigeria.⁹⁰ Additionally, lack of resilient infrastructure, both physical and social, worsens lower health outcomes in Africa by exposing individuals and local communities to the impacts that threaten human existence.

Reducing the impact of climate change in Africa requires better adaptation and mitigation strategies to confront vulnerabilities and prevent the most catastrophic impacts of climate change. There is no doubt that the vulnerabilities that exacerbate climate change's impact in Africa necessitate expedited adaptation activities.⁹¹ In the area of health, studies show that better access to health facilities and treatment could improve health outcomes for the people in the region.⁹² Providing safe, affordable drinking water and proper maternal education improves health outcomes and safeguards the survival of children under five.⁹³ Adaptation measures should all be focused on solving or ameliorating both the physical and social vulnerabilities within local communities in the Global South.

III. CLIMATE FINANCE IN AFRICA: NEEDS AND CHALLENGES

This Part explores climate finance needs in the region and the challenges in attracting funding. Climate finance refers to “local, national, or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change.”⁹⁴ Addressing climate change necessitates a significant investment, yet there is insufficient

rsbl.2022.0365 (stating that *Anopheles* mosquitos are traveling further south and to higher elevations, which is consistent with climate change impacts on Africa).

89. *Id.*

90. Colin D. Butler et al., *Climate Change and Health in Africa*, in CLIMATE CHANGE AND GLOBAL HEALTH 218, 222 (Colin D. Butler ed., 2016).

91. See Downing et al., *supra* note 84, at 19–20.

92. Wang et al., *supra* note 78, at 13.

93. *Id.*

94. *Introduction to Climate Finance*, UNITED NATIONS CLIMATE CHANGE, <https://unfccc.int/topics/introduction-to-climate-finance> [<https://perma.cc/MK9T-TJH8>].

funding to facilitate the essential clean energy transformation in the region. Financing climate change in Africa reeks of broken promises and neglect. The pledge by developed countries to commit \$100 billion annually to fight climate change has yet to materialize.⁹⁵

Without neglecting adaptation efforts in the region, financing mitigation efforts must be increased immediately. For several reasons, the exacerbation of climate change impacts in the region necessitates the urgent need for Africa to accelerate clean energy investments, adaptation, and mitigation efforts. Africa is warming faster than the global average, and evidence shows it is not retreating. Secondly, Africa's climatic variation, coupled with its land mass, further advances and heightens the consequences of global warming.⁹⁶

Financing mitigation efforts mainly require building clean energy infrastructure to reduce greenhouse gas emissions to provide a safer future for the next generation. However, less economically developed countries, which African countries are primarily among, consider ambitious greenhouse gas reduction goals as "illegitimate and a threat."⁹⁷ Firstly, their belief is premised on the fact that the Global North is responsible for the legacy of emissions and atmospheric concentration, which is the cause of global warming.⁹⁸ Secondly, devoting substantial budgetary allocation to curb increasing greenhouse gas emissions undercuts the funds to build an energy-secure future and reduce extreme poverty.⁹⁹ The paucity of funds and the lack of responsibility informs the lethargy in local climate change funding in Africa. The African region requires huge investment, and the next Section will show the magnitude of the needs and challenges to climate finance in the region.

A. Climate Finance Needs

Climate finance needs in Africa are staggering. Africa requires "[extract_itex]2.8 trillion between 2020 and 2030 to implement its Nationally Determined Contributions (NDCs) under the Paris Agreement."¹⁰⁰ That represents about $\$277$ billion annually to meet its goals.¹⁰¹ Breaking

95. Emma Rumney et al., *Rich Nations Say They're Spending Billions to Fight Climate Change. Some Money Is Going to Strange Places.*, REUTERS (June 1, 2023, 12:00 PM), <https://www.reuters.com/investigates/special-report/climate-change-finance/> [<https://perma.cc/A2Y5-5LF6>].

96. Collier et al., *supra* note 74, at 337–38, 344.

97. Arunabha Ghosh & Ngaire Woods, *Developing Country Concerns About Climate Finance Proposals: Priorities, Trust, and the Credible Donor Problem*, in CLIMATE FINANCE: REGULATORY AND FUNDING STRATEGIES FOR CLIMATE CHANGE AND GLOBAL DEVELOPMENT 157, 158 (Richard B. Stewart et al. eds., 2009).

98. *Id.*

99. *Id.*

100. CHAVI MEATTLE ET AL., CLIMATE POL'Y INITIATIVE, LANDSCAPE OF CLIMATE FINANCE IN AFRICA V (2022), <https://www.climatepolicyinitiative.org/wp-content/uploads/2022/09/Landscape-of-Climate-Finance-in-Africa.pdf> [<https://perma.cc/Y94S-P32T>].

101. *Id.* at 5.

it down, Africa needs \$50 billion annually by 2050 for adaptation and \$190 billion annually by 2030 for mitigation.¹⁰² Amidst all this, annual climate finance flows stand at \$30 billion.¹⁰³ African countries have allocated about \$26.4 billion of public resources to finance climate needs.¹⁰⁴ There is an enormous gap between available climate funds for African countries compared to the needs.

Collectively, Africa's GDP stood at \$3.1 trillion as of April 2023.¹⁰⁵ The gap implies that more than 10% of Africa's GDP is needed to cover the shortfall in climate financing over the next ten years.¹⁰⁶ This is impracticable. The data compiled by the Climate Policy Initiative shows that sub-Saharan Africa spent 4.95% of its GDP on the health sector alone in 2019.¹⁰⁷ That amount represents only a fraction of the additional investment required for education, roads, and other infrastructure.

In Nigeria's case, it requires about \$177 billion over ten years to meet its NDC goals.¹⁰⁸ The figure represents about 41% of the country's entire GDP.¹⁰⁹ Dedicating a sizable portion of a region's GDP to finance climate action may be unfeasible, considering the region's poverty and lack of industrialization. Compared with its goals, Nigeria's \$1.9 billion budget for climate-related activities in 2019–2020 shows a colossal deficit.¹¹⁰ Attaining successful climate finance may be a massive problem for Nigeria with \$172 billion in debt.¹¹¹ Meanwhile, its yearly budget in the last two years is less than one-fourth of the country's debt.¹¹²

102. INT'L MONETARY FUND, REGIONAL ECONOMIC OUTLOOK: SUB-SAHARAN AFRICA 1 (2023), <https://www.imf.org/-/media/Files/Publications/REO/AFR/2023/April/English/text.ashx> [<https://perma.cc/65MF-GSMC>].

103. SANDRA GUZMÁN ET AL., CLIMATE POL'Y INITIATIVE, THE STATE OF CLIMATE FINANCE IN AFRICA: CLIMATE FINANCE NEEDS OF AFRICAN COUNTRIES IV (2022), <https://www.climatepolicyinitiative.org/wp-content/uploads/2022/06/Climate-Finance-Needs-of-African-Countries-1.pdf> [<https://perma.cc/9VLV-38WU>].

104. MEATTLE ET AL., *supra* note 100, at 5.

105. *Gross Domestic Product (GDP) in Africa from 2010 to 2027*, STATISTA (Apr. 28, 2023), [https://www.statista.com/statistics/1300858/total-gdp-value-in-africa/#:~:text=Gross%20Domestic%20Product%20\(GDP\)%20in%20Africa%202010%2D2027&text=This%20was%20the%20highest%20value,trillion%20U.S.%20dollars%20by%202027](https://www.statista.com/statistics/1300858/total-gdp-value-in-africa/#:~:text=Gross%20Domestic%20Product%20(GDP)%20in%20Africa%202010%2D2027&text=This%20was%20the%20highest%20value,trillion%20U.S.%20dollars%20by%202027) [<https://perma.cc/3WH5-VRC5>].

106. GUZMÁN ET AL., *supra* note 103, at IV.

107. *Id.* (internal citation omitted).

108. FED. MINISTRY OF ENV'T, ABUJA, *supra* note 19, at 34.

109. See GUZMÁN ET AL., *supra* note 103, at 34 (stating Nigeria's GDP is about \$432.3 billion).

110. SEAN STOUT & CHAVI MEATTLE, CLIMATE POL'Y INITIATIVE, LANDSCAPE OF CLIMATE FINANCE IN NIGERIA 7 (2022), <https://www.climatepolicyinitiative.org/wp-content/uploads/2022/10/Landscape-of-Climate-Finance-in-Nigeria.pdf> [<https://perma.cc/KXW7-2KBT>].

111. Camillus Eboh, *Nigeria's Total Debt to Hit \$172 Bln After Loan-to-Bond Swap, New Borrowings-DMO*, REUTERS (Jan. 5, 2023, 4:51 AM), <https://www.reuters.com/world/africa/nigerias-total-debt-hit-172-bln-after-loan-to-bond-swap-new-borrowings-dmo-2023-01-05/> [<https://perma.cc/2ENS-AVPX>].

112. See PwC Bulletin: *Nigeria's 2022 Budget Highlights*, PwC (Oct. 2021), <https://www.pwc.com/ng/en/assets/pdf/pwc-bulletin-nigeria-2022-budget-highlights%20.pdf> [<https://perma.cc/SDD6-7NVZ>] (showing Nigeria's budget the last three years);

An analysis of 24 countries in the Global South indicates that climate finance needs will average about 1.4% of the GDP by 2030, with substantial disparities among upper- and lower-middle-income countries.¹¹³

Studies show that mitigation plans require over 60% of the total finance need, while adaptation needs 24%.¹¹⁴ There are two options left: fill the gap between financial flows or ignore it. Ignoring it portends further dangers in realizing climate goals. Ignoring the financial flows is not an option, but filling the financial gap is herculean. Absent consistent and adequate financing of climate change mitigation and adaptation efforts in developing countries, the global energy transition would be worth nothing.

B. *Extant Climate Finance Avenues*

This Section will discuss available options for financing climate change action in Africa. It will use Nigeria as a case study to explain the extant financing options. Most countries have developed various methods of financing climate action in the Global South. Mechanisms like concessional loans, bonds, grants, domestic government appropriation, and multilateral and development organizations funding dominate the bulk of climate financing in Africa.¹¹⁵

1. Appropriation

It is a common practice for all African countries to rely on their national budgets for implementing climate-related initiatives. However, the budget allocations are insufficient, and the needs outweigh the allocations.¹¹⁶ From 2017 to 2022, Nigeria allocated \$10.1 billion as part of its annual appropriation to fund capital projects for climate action.¹¹⁷ On the other hand, South Africa recently invested \$8.5 billion in climate

see also Ruth Olurounbi, *Nigeria's Tinubu Plans \$34 Billion Budget in 2024 to Lift Growth*, BLOOMBERG (Oct. 16, 2023, 2:38 PM), <https://www.bloomberg.com/news/articles/2023-10-16/nigeria-s-tinubu-plans-34-billion-budget-in-2024-to-lift-growth> [<https://perma.cc/84PX-SKYH>].

113. *What You Need to Know About How CCDRs Estimate Climate Finance Needs*, WORLD BANK (Mar. 13, 2023), <https://www.worldbank.org/en/news/feature/2023/03/13/what-you-need-to-know-about-how-ccdrs-estimate-climate-finance-needs> [<https://perma.cc/EW7M-N98N>].

114. GUZMÁN ET AL., *supra* note 103, at 6.

115. *See* MEATTLE ET AL., *supra* note 100, at 10–15 (outlining the common forms of climate finance in Africa).

116. *Id.*

117. OBINNA UGOCHUKU & CHUKWUMERIJE OKEREKE, *SOC'Y FOR PLANET & PROSPERITY, NIGERIA: THE POTENTIAL ROLE OF THE CLIMATE CHANGE ACT IN CATALYZING CLIMATE FINANCE 6* (2022), [https://sppnigeria.org/the-potential-role-of-nigerias-climate-change-act-in-catalyzing-climate-finance-in-the-country/#:~:text=in%20the%20Country-,The%20Potential%20Role%20of%20Nigeria's%20Climate%20Change%20Act%20in%20Catalyzing,Climate%20Change%20Act%20\(CCA\)](https://sppnigeria.org/the-potential-role-of-nigerias-climate-change-act-in-catalyzing-climate-finance-in-the-country/#:~:text=in%20the%20Country-,The%20Potential%20Role%20of%20Nigeria's%20Climate%20Change%20Act%20in%20Catalyzing,Climate%20Change%20Act%20(CCA)) [<https://perma.cc/X9HL-TQBT>].

change funding it received from wealthy nations.¹¹⁸ Both sums represent a drop in the ocean. Nigeria and South Africa boost budget appropriations by creating other avenues to raise funds.¹¹⁹ Nigeria enacted the Climate Change Act (CCA), which created the National Climate Council (NCC) and robust provisions for funding climate action in Nigeria.¹²⁰ The law gives the NCC broad powers to mobilize critical financial resources for climate action.¹²¹ These include the administration of the climate fund that pulls resources from government appropriations, subventions, grants, donations, local service fees, international organizations, carbon tax and emissions trading, and other miscellaneous funds.¹²² The NCC can apply the funds toward innovative climate change mitigation and adaptation projects.¹²³

Budget allocation is a good vehicle for driving climate change action and financing in Nigeria due to its distributive nature and wide reach among citizens. For instance, because sub-national and local governments equally have budget resources for climate financing, the structure ensures that needed funds reach the lowest rung of society and fund needed projects in local communities. Additionally, sub-national and local city budgets focus primarily on adaptation measures that are often neglected but easier to finance. However, budgetary allocations may be inconsistent. They often rely on the government's ability to raise funds through local sources and taxes, which in the actual case are often insufficient to fund other aspects of the budget, let alone fund humongous mitigation and adaptation measures.

In 2023, Nigeria's national budget failed to make any capital provision for climate financing, which is a step back from the progress that has been made over the past four years.¹²⁴ The government's reason was that the country's huge debt profile required setting aside funds for debt servicing. Removing climate financing projects from the 2023

118. S'thembele Cele, *How South Africa Plans to Spend \$8.5 Billion of Climate Funding*, BLOOMBERG (Nov. 4, 2022, 1:26 PM), <https://www.bloomberg.com/news/articles/2022-11-04/south-africa-to-use-bulk-of-8-5-billion-funding-for-electricity> [<https://perma.cc/88Q9-48N3>].

119. See Carbon Tax Act 15 of 2019 (S. Afr.) (stating South Africa raises funds through taxing large emitters in the country); Muhammed Tawfiq Ladan, *A Review of Nigeria's 2021 Climate Change Act: Potential for Increased Climate Litigation*, INT'L UNION FOR CONSERVATION OF NATURE (Mar. 28, 2022), <https://www.iucn.org/news/commission-environmental-economic-and-social-policy/202203/a-review-nigerias-2021-climate-change-act-potential-increased-climate-litigation> [<https://perma.cc/RA9B-4YBN>] (stating Nigeria established the National Council on Climate Change to assist with financing climate action projects).

120. Climate Change Act (2021), § 3 (Nigeria).

121. See *id.* § 4(h).

122. *Id.* § 15.

123. *Id.*

124. Chukwumerije Okereke & Obi Ugochuku, *The Climate Change Act and Unlocking Climate Finance (1)*, PREMIUM TIMES (Nov. 15, 2022), <https://www.premium-timesng.com/opinion/565557-the-climate-change-act-and-unlocking-climate-finance-1-by-okereke-ugochuku.html> [<https://perma.cc/KKR9-526A>].

budget may seem innocuous, but it negatively impacts ongoing climate financing projects in the country. The ripple effects impact climate mitigation and adaptation projects instituted by government departments and agencies. It impedes ongoing work and reverses progress made.

2. Green Bonds

The utilization of green bonds to finance renewable and green projects in Africa has been effective partly because capital markets respond positively to them. However, out of the globally issued bonds in 2021, Africa had 5.8% of the bonds and only 0.077% were green bonds.¹²⁵ The number of countries issuing green bonds is not significant. In 2012, only Mauritius and South Africa issued green bonds.¹²⁶ According to the Climate Bonds Initiative, energy, transport, and buildings represent 77% of the total utilization of the funds realized from green bonds.¹²⁷ Governments or private banks can issue bonds matched to specific projects within the region.¹²⁸

The availability of untapped renewable energy resources on the continent justifies the need to utilize green bonds to finance green energy investments in the region.¹²⁹ Also, green bonds are desirable in the region because they balance answering the call to address climate change with providing local energy access and do so without increasing greenhouse gas emissions. Several opportunities abound in the region to utilize green bonds due to the availability of clean energy sources. Nigeria has abundant sunlight throughout most months of the year, especially in the country's northern region, and harbors adequate wind sites in the same region.¹³⁰ Also, its several rivers and streams provide opportunities to develop geothermal electricity.¹³¹

The success of the African Development Bank in providing technical and capacity-building resources to the countries has helped accelerate green bond proliferation in Africa. In some instances, it issued

125. *Interactive Data Platform*, CLIMATE BONDS INITIATIVE, <https://www.climatebonds.net/market/data/> [https://perma.cc/4XYL-R5PS] (last updated 2022).

126. *Id.*

127. *Id.*

128. *Id.*; see also *Access Bank PLC*, CLIMATE BONDS INITIATIVE, <https://www.climatebonds.net/certification/accessbank> [https://perma.cc/FGS3-ATRG] (stating that Access Bank Nigeria issued a \$41.8 million green bond to provide clean energy and environmental resilience and adaption measures for the new Eko Atlantic City).

129. Neil Ford, *Africa Poised for Green Bond Growth*, AFRICAN BUS. (May 16, 2022), <https://african.business/2022/05/finance-services/africa-poised-for-green-bond-growth> [https://perma.cc/2H2WPXXJ].

130. JP Casey, *Electrifying Nigeria: Could Solar Power One Million Households?*, POWER TECH. (Jan. 20, 2020), <https://www.power-technology.com/features/electrifying-nigeria-could-solar-power-one-million-households/> [https://perma.cc/6U9H-8CBB]; *Wind Energy Potential in Nigeria*, ELECTRICITY HUB (July 22, 2022), <https://theelectricityhub.com/wind-energy-potential-in-nigeria/> [https://perma.cc/T5AP-7GXH]

131. *Geothermal Energy in Nigeria*, STELLAE ENERGY (July 19, 2021), <https://stellaeenergy.com/geothermal-energy-in-nigeria> [https://perma.cc/P2SX-6L8F].

green bonds to facilitate green regional investments. Recently, the bank issued its inaugural Green Bond in the Norwegian krone market.¹³² It represents a huge boost to financing green growth in the region. Other African countries are in the mix of countries utilizing green bonds to solve climate financing gaps in Africa, but South Africa has taken the lead.¹³³

Although Africa has regulatory outlets to finance climate action, obtaining financing is still fraught with challenges. Even though Nigeria prides itself as one of the first countries to introduce sovereign green bonds to finance climate change action in the region,¹³⁴ the realized sums of money used to fund the clean energy initiatives in the national budget are still inadequate. In addition, most of the green bonds are devoted to mitigation efforts¹³⁵ and, therefore require a substantial amount of money and defined technical frameworks in which the region may lack expertise. For example, the regulatory framework to address the challenges of green bonds is still weak in the region. A better and more robust regulatory framework would provide a defined and precise application of the rules and processes needed to address disputes in the future.

3. Private Sector Financing

As of the end of 2020, private climate finance contributions to Africa amounted to \$4.2 billion, which represents 14% of the \$29.5 billion in global climate finance contributions.¹³⁶ Climate finance flows into Africa were significantly lower compared to other regions like Latin America and the Caribbean at 49%, East Asia and the Pacific at 39%, and South Asia at 37%.¹³⁷ In addition, they were concentrated in a

132. *The African Development Bank Issues Inaugural Green Bond in the Norwegian Krone Market*, AFRICAN DEV. BANK GRP. (Mar. 9, 2023), <https://www.afdb.org/en/news-and-events/press-releases/african-development-bank-issues-inaugural-green-bond-norwegian-krone-market-59624> [https://perma.cc/TB3V-A33Q]; see also *Sustainable Bond Program*, AFRICAN DEV. BANK GRP., <https://www.afdb.org/en/financial-information/investor-resources/capital-markets/sustainable-bond-program> [https://perma.cc/ER3H-9KZA] (stating the African Development Bank has issued other green bonds in the past, including a ZAR 200 million one-year Green Bond issued in 2022 and due in September 2023; a SEK 1 billion five-year Green Bond issued in 2022 and due in April 2026; and a SEK 2 billion five-year Green Bond issued in 2019 and due in April 2024).

133. Ford, *supra* note 129.

134. FED. MINISTRY OF ENV'T, ABUJA, *supra* note 19, at 35; see also SHANAZ BROERMANN, POLICY BRIEF: COP26 RESILIENCE HUB HIGH-LEVEL DIALOGUE 4 (2021), <https://www.cabri-sbo.org/uploads/files/Documents/Policy-Brief-CoP26-climate-budgeting-high-level-dialogue-3-November-2021.pdf> [https://perma.cc/XK8Q-9N87].

135. Broermann, *supra* note 134, at 4.

136. *Africa: Climate Finance Facing Global Macroeconomic Challenges; Time for Private Sector Support*, AFRICAN DEV. BANK GRP. (Apr. 24, 2023), <https://www.afdb.org/en/news-and-events/africa-climate-finance-facing-global-macroeconomic-challenges-time-private-sector-support-60566> [https://perma.cc/5TGZ-YG5K].

137. *Id.*

few countries.¹³⁸ Nigeria received about \$0.4 billion in private climate finance between 2019 and 2020.¹³⁹ Nigeria devoted the majority of the funds towards building its energy systems to close its energy infrastructure gap.¹⁴⁰ Devoting huge resources to mitigation projects is not new in the African region. Mitigation projects absorbed 81% of the funding in the region.¹⁴¹

Private sector financing holds a key role in climate change mitigation and adaptation efforts in Africa; however, it is still too low,¹⁴² especially since the continent is disproportionately impacted by the other social and physical vulnerabilities. Currently, by African Development Bank estimates, Nigeria requires \$247.3 billion for climate financing between 2020 and 2030, averaging \$22.5 billion annually.¹⁴³ Absent adequate private financing of climate transition efforts in Africa, achieving net zero will be impossible in the region. The huge disparity between what the private sector invests in developed economies and Africa is concerning for the climate change efforts in the region. So far, developed economies have left Africa behind.

4. Multilateral Sources and International Organization

Significant among climate financing sources in Africa are the multilateral organizations and development financing institutions (DFI) that account for the highest source of climate funding in the region.¹⁴⁴ They account for 49% of total climate financing in Africa.¹⁴⁵ These include investments by multilateral climate funds like Green Climate Fund (GCF), Global Environment Facility (GEF), and Clean Technology Fund.¹⁴⁶ As of 2022, about \$60.7 billion worth of climate funding has been provided by multilateral development banks to low- and middle-income countries.¹⁴⁷ The African Development Bank increased its contribution to climate funding from \$2.1 billion in 2020 to about \$3.7 billion in 2022.¹⁴⁸ A majority of the funds are disbursed as grants and concessional loans for the continent.¹⁴⁹ A mix of foreign countries

138. *Id.* (showing that climate finance in Africa was concentrated in countries with stronger financial markets like South Africa, Nigeria, Kenya, Morocco, and Egypt).

139. AFRICAN DEV. BANK GRP., COUNTRY FOCUS REPORT: NIGERIA 11 (2023), <https://www.afdb.org/en/documents/country-focus-report-2023-nigeria-mobilizing-private-sector-financing-climate-and-green-growth> [<https://perma.cc/C2VS-BF7Y>].

140. *Id.* at 12.

141. MEATTLE ET AL., *supra* note 100, at VII.

142. *Id.* at VI–VII.

143. AFRICAN DEV. BANK GRP., *supra* note 139, at 14.

144. *Id.* at 12.

145. MEATTLE ET AL., *supra* note 100, at VII.

146. *Id.* at 10.

147. EUROPEAN INV. BANK, 2022 JOINT REPORT ON MULTILATERAL DEVELOPMENT BANKS' CLIMATE FINANCE 7 (2023), https://www.afdb.org/sites/default/files/documents/publications/joint_mdb_climate_finance_report_2022.pdf [<https://perma.cc/4EV7-GNJQ>].

148. *Id.* at ix fig.1a.

149. *Id.* at 11.

also support climate action in the African region. A culmination of the various sources contributes to both mitigation and adaptation in the region.

C. Challenges to Climate Finance in Africa

Amidst all the climate finance flows, Africa faces steep challenges in attracting adequate climate finance. Since 2011, global climate financing has doubled to nearly \$4.8 trillion cumulatively.¹⁵⁰ Despite being heavily impacted by climate change with the attendant vulnerabilities, Africa received only 26% of the total climate finance flows,¹⁵¹ putting the continent at a critical disadvantage. 75% of the total climate finance from 2011 to 2020 went to North America, western Europe, east Asia, and the Pacific.¹⁵² While other regions have sourced climate finance domestically, the same is not the case for the African countries. Much of their climate finance funding came from international sources.¹⁵³ Other continents had above 50% domestic climate finance flows except South Asia; in contrast, sub-Saharan Africa and the Middle East & North Africa had only 18% and 42% in domestic climate finance, respectively.¹⁵⁴

The current situation indicates that Africa is not on par with climate financing compared to other regions. It is a significant obstacle on the road to net zero and clean energy transition. Africa harbors most of the poorer and weaker economies in the world. There is a vast chasm between climate change investments in the developed economies and Africa. In 2021 alone, the United Kingdom Infrastructure Bank committed \$29 billion to fight climate change.¹⁵⁵ Also, the United Kingdom's government sold about \$20 billion worth of sovereign green bonds to finance "green projects" across the United Kingdom.¹⁵⁶ In comparison, the total climate finance flows to Africa were about \$30 billion.¹⁵⁷ Comparing the populations of sub-Saharan Africa and the United

150. BAYSAN NARAN ET AL., CLIMATE POL'Y INITIATIVE, GLOBAL LANDSCAPE OF CLIMATE FINANCE: A DECADE OF DATA 4 (2022), <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-a-decade-of-data/> [https://perma.cc/39Y3-V8NN]. Though the current funding appears significant, the world is not yet on course to limit global warming to 1.5°C. *Id.* The chances that the world will attain that soon is doubtful. It still requires about \$4.3 trillion annually to prevent devastating effects of climate change. *Id.*

151. Lars Kamer, *Total Climate Finance Flows to Africa from 2010 to 2019*, STATISTA (Mar. 22, 2023), <https://www.statista.com/statistics/1311521/climate-finance-flows-to-africa/> [https://perma.cc/D8VS-WVLT].

152. NARAN ET AL., *supra* note 150, at 20.

153. *Id.* at 20.

154. *Id.* at 20 fig.11.

155. *United Kingdom - Country Commercial Guide: Investment Climate Statement*, INT'L TRADE ADMIN. (Sept. 12, 2022), <https://www.trade.gov/country-commercial-guides/united-kingdom-investment-climate-statement> [https://perma.cc/5JVH-8C2W].

156. *Id.*

157. *See supra* note 103 and accompanying text.

Kingdom, at 1.2 billion and 67 million, respectively,¹⁵⁸ means that per capita spending on climate action was about \$25 in Africa versus \$433 in the UK. Additionally, to show the dearth of adequate climate financing in Africa, the United States budgeted \$24 billion in 2024 for climate resilience in communities nationwide.¹⁵⁹ This number does not take into account other public and private sector resources available. Meanwhile, Nigeria's 2023 budget for all expenditures is \$47.3 billion.¹⁶⁰ If Africa must be carried along, significant investments must be made by the Global North and its private entities to bring the continent to par with other regions. The total private climate finance flows in the African region were only about 14% of the total flows compared to other regions like the United States and Canada, with 96% of the climate-related investments coming from the private sector.¹⁶¹ Even within Africa, as previously described, the climate finance flows were concentrated in a few African countries, leaving other countries with fewer resources and less economic power.¹⁶²

However, domestic risks in investments, like unstable political climates and weak financial systems, challenge the attraction of private investments to finance climate change efforts in Africa. Currency instability, corruption, insecurity, weak institutional structures to manage funding and financial systems, inadequate regulatory frameworks, monopolies, price fixing, subsidies, and lack of a free market contribute to factors militating against climate finance in the region. For instance, Nigeria directly subsidizes its electricity sector instead of offering incentives. At the last count, the annual subsidy for electricity generation from January to April 2023 was 57 billion naira, an equivalent of \$71 million.¹⁶³ The overregulation of the electricity sector and price controls makes it challenging to attract competitive renewable energy producers into the electricity market. On the other hand, the lack of subsidization of renewable energy production and allowing market prices to fix the cost of electricity may raise the cost above poor consumers' ability to pay.

Responsibility for addressing climate change rests on the United Nation's Common but Differentiated Responsibilities and Respective

158. *Population, Total*, WORLD BANK (2022), <https://data.worldbank.org/indicator/SP.POP.TOTL> [<https://perma.cc/9VU6-ATBP>].

159. Emma Newburger, *Biden Budget Includes \$24 Billion for Conservation and Protecting Communities from Climate Disasters*, CNBC (Mar. 9, 2023, 2:32 PM), <https://www.cnbc.com/2023/03/09/bidens-budget-proposal-calls-for-boosting-climate-resilience-funding.html> [<https://perma.cc/Y295-WD8D>].

160. Chinedu Asadu, *Nigeria's Buhari Proposes Record \$47.3B Budget for 2023*, AP NEWS (Oct. 7, 2022, 1:08 PM), <https://apnews.com/article/africa-business-economy-nigeria-economic-growth0eab6c8193ceb33a1cb08316b812b33c> [<https://perma.cc/PC8E-W2UA>].

161. NARAN ET AL., *supra* note 150, at 14, 20 fig.11.

162. *See supra* note 138 and accompanying text.

163. Okechukwu Nnodim, *NERC May Okay Tariff Hike as Electricity Subsidy Hits N2.8tn*, PUNCH (July 17, 2023), <https://punchng.com/nerc-may-okay-tariff-hike-as-electricity-subsidy-hits-n2-8tn/> [<https://perma.cc/X4N4-4QRY>].

Capabilities in light of different national circumstances (CBDR–RC).¹⁶⁴ The lack of commitment from global superpowers toward climate finance hinders delivery of sustainable climate funding to Africa. Although the common but differentiated framework addresses the climate justice aspect of climate financing, the framing of climate change finance responsibility is crucial to motivating the global superpowers to get involved. If viewed through the lens of responsibility and obligation, it leads to the trap of identifying specific sources of each GHG and apportioning responsibility for mitigation and adaptation. An arrangement that has been met with considerable resistance in the past.¹⁶⁵

However, if viewed through the framework of a cleaner future, in that case, we can recognize that due to Africa's potential for economic growth in the future, the lack of climate financing in Africa will incentivize energy production using traditional energy sources, increasing greenhouse gas emissions. Eventually, the GHG emissions from emerging economies as a cluster will offset any corresponding GHG emissions reduction in the Global North, making the clean energy transition efforts fruitless.¹⁶⁶

The developed countries pledged \$100 billion annually to fight climate change but have barely met that target.¹⁶⁷ In 2013, they fell short by 47.6% of the total \$100 billion.¹⁶⁸ In 2018 and 2020, they fell short by 21.1% and 27.6%, respectively.¹⁶⁹ This year may be different as the world may be on course to meet the target, but that is yet to be seen until the actual reporting is out.

There is also the issue of a lack of technical expertise to measure the climate needs in the region accurately. Private entities conduct most of the reporting on climate finance, like the Climate Policy Initiative and local studies embarked upon by African scholars. On the implementation side, the expertise required for project implementation may be lacking. There is also a disparity between approved funding and expenditure.¹⁷⁰ Accessing climate finance by African countries is bedeviled with bottlenecks. The lack of requisite creditworthiness required by private organizations and onerous conditions attached to loan and grant accessibility impedes access to climate financing.¹⁷¹ There is also the issue of indirect access to loans, which increase transaction costs

164. See U.N. Framework Convention on Climate Change art. 3(1), May 9, 1992, 1771 U.N.T.S. 164.

165. Goldstone, *supra* note 11.

166. Kimani, *supra* note 12.

167. Rumney et al., *supra* note 95.

168. See ORG. FOR ECON. COOP. & DEV., AGGREGATE TRENDS OF CLIMATE FINANCE PROVIDED AND MOBILISED BY DEVELOPED COUNTRIES IN 2013-2020, at 5 fig.1 (2022), <https://doi.org/10.1787/d28f963c-en>.

169. *Id.*

170. SMITA NAKHOODA ET AL., OVERSEAS DEV. INST., CLIMATE FINANCE IN SUB-SAHARA AFRICA 3 (2011), <https://www.cbd.int/financial/climatechange/subsaharan-climate.pdf> [<https://perma.cc/XDG5-PUJT>].

171. Guzmán et al., *supra* note 103, at V.

and reduce loans' accessibility. Some African countries, like Nigeria, have strict financial rules that prohibit repatriation of profits.¹⁷² Weaker governance institutions and the political climate heighten the risks of investments, which discourages investors from coming into the country.

However, addressing climate change issues requires a bottoms-up approach, not a top-down paternalistic approach, especially in adaptation strategies. What is required is local resources conversant with the community's requirements and not unique expertise. The challenges of climate change and the inability to address the impacts leave the African region behind in the just energy transition. Undoubtedly, clean energy is a massive part of the just transition movement. And climate change is projected to increase the global demand for energy by 2050.¹⁷³ Therefore, reversing climate change impacts requires enormous investments in clean energy and mitigation and adaptation measures.

As this Article mentioned, Africa feels the impacts of climate change more than other regions, as the vulnerabilities exacerbate the impacts of climate change.¹⁷⁴ Africa's energy needs are growing rapidly and so is global warming. Weak energy infrastructure and poverty has ravaged the continent, underscoring the need to rebuild. For a region in the throes of underdevelopment and with an urgent need to reduce energy poverty through industrialization, the dearth of climate finance for clean energy presents a conundrum because ongoing industrialization efforts relying on traditional energy sources will undoubtedly lead to increased greenhouse gas emissions.

Developing economies and multilateral institutions are debating whether there is a binary choice between a cleaner future and a poorer country.¹⁷⁵ In that regard, should the international community tie climate finance to emissions or channel it toward adaptation?¹⁷⁶ Poorer African countries resent the calls to tie climate finance to emissions in middle-income countries in the Global South by offering them cheaper loans to offload their greenhouse-emitting industries.¹⁷⁷ For example, Indonesia and South Africa got \$20 billion and \$8.5 billion, respectively,

172. See Benita Ngere & Kiojare Raro-Edo, *Repatriating Funds from Nigeria: Unrestricted but Fettered*, KAYODE SOFOLA & ASSOCS. (2017), <https://kslegal.org/wp-content/uploads/2017/10/Repatriation-of-Foreign-Investment.pdf> [<https://perma.cc/A7LY-N9Z>] (describing the difficulty associated with getting the Central Bank of Nigeria's approval for repatriation).

173. See generally Enrica De Cian & Ian Sue Wing, *Global Energy Demand in a Warming Climate* 34 (Fondazione Eni Enrico Mattei, Working Paper No. 016.2016, 2016), <http://dx.doi.org/10.2139/ssrn.2744532> (finding climate change is expected to increase demand for energy by 7–17% by 2050).

174. See *supra* Part II.

175. See generally *The Choice Between a Poorer Today and a Hotter Tomorrow*, *ECONOMIST* (June 27, 2023), <https://www.economist.com/finance-and-economics/2023/06/27/the-choice-between-a-poorer-today-and-a-hotter-tomorrow> [<https://perma.cc/N7PD-AW2C>] (explaining the dilemma faced by developing countries between spending tax dollars to alleviate poverty or curb emissions).

176. See *id.*

177. *Id.*

to fight climate change, while other countries like Zambia got nothing, despite being left with 13% of its budget after paying debts and salaries.¹⁷⁸ Many African countries believe that distributing climate investments across a wider range of African countries is more beneficial than concentrating only on countries that have higher carbon emissions. It is unhealthy to focus on specific countries if climate investment is viewed from the angle of preventing the proliferation of traditional energy resources and filling the energy gap in the region. Many countries in Africa are set on the path to sustainable development and industrialization, and investing in cleaner energy sources lays the foundations for competitive industrialization in the years ahead.

IV. REALISTIC CLIMATE FINANCING IN AFRICA

Addressing climate finance challenges requires innovative solutions. African countries are committed to transitioning to clean energy. However, policymakers and national governments face a dearth of financial resources, including how to proceed.¹⁷⁹ Abandoning all fossil fuel sources in favor of clean energy and renewables will further exacerbate poverty in the region.¹⁸⁰ Because energy poverty and deficient infrastructure mark the region, African nations are unlikely to agree without providing alternatives.¹⁸¹

Despite these challenges, finding innovative avenues to raise climate finance for Africa is central to this Article. The following Sections look at diverse options that cover the need to rescue Africa from the claws of climate change while balancing the need to transition justly and escape the devastating impacts of climate change. This Part will address solutions via four broad headings encompassing the available solutions to address the challenges.

A. *Galvanizing Private Sector Investment*

Galvanizing private sector investment is one pathway to improved private climate funding in Africa. It might sound cliché that increased

178. *Id.*

179. NAT'L INTEL. COUNCIL, CLIMATE CHANGE AND INTERNATIONAL RESPONSES INCREASING CHALLENGES TO US NATIONAL SECURITY THROUGH 2040, at 1 (2021), https://www.dni.gov/files/ODNI/documents/assessments/NIE_Climate_Change_and_National_Security.pdf [<https://perma.cc/M9QN-LLX2>].

180. See INT'L ENERGY AGENCY, AFRICA ENERGY OUTLOOK 2022, at 17–18 (2023), <https://iea.blob.core.windows.net/assets/220b2862-33a6-47bd-81e9-00e586f4d384/AfricaEnergyOutlook2022.pdf> [<https://perma.cc/AM47-S99K>] (discussing the importance of fossil fuel development on African economies).

181. See Riccardo Puliti, *Putting Africa on the Path to Universal Electricity Access*, WORLD BANK BLOGS (Jan. 31, 2022), <https://blogs.worldbank.org/energy/putting-africa-path-universal-electricity-access> [<https://perma.cc/98YQ-DVHW>] (discussing issues Africans face for electricity production).

private sector investment is indispensable to climate finance in Africa, but governments alone cannot fund climate change action.¹⁸² Private sector investment has been flowing into the country; however, the challenge is that private sector investment so far has been inadequate.¹⁸³ Mitigation efforts take up most climate financial flows coming into Africa while ignoring adaptation measures.¹⁸⁴

Instead of increasing investments in fossil fuel extraction in Africa, the government should focus on improving the green bonds process as it has shown success in the past. Green bonds are risk management tools and assuage the fears of private investors in Africa.¹⁸⁵ Codifying existing regulatory frameworks improves investor confidence and shores up accountability within the sector.¹⁸⁶ For example, the Nigerian Green Bond Market Development Programme, which provides a policy framework for the listing and issuing of green bonds in the country, should be harmonized and its guidelines enacted into law to boost investor confidence and ensure accountability.¹⁸⁷ National governments can speed up the issuance of sovereign green bonds within the African region to finance major mitigation projects in the country. Additionally, incentivizing local financial institutions through either tax rebates or breaks to issue corporate green bonds unlocks more climate finance in Africa.

Mitigation delivers only long-term benefits.¹⁸⁸ There is a need for private sector investments in adaptation measures that will deliver short-term effective results¹⁸⁹ and reduce the immediate impacts of

182. See *supra* Part III.

183. See *supra* Section III.B.3.

184. UNITED NATIONS ENV'T PROGRAMME, ADAPTATION GAP REPORT 2022, at 51 (2022), <https://wedocs.unep.org/bitstream/handle/20.500.11822/41078/AGR2022.pdf?sequence=1&isAllowed=y> [<https://perma.cc/QCC4-VLLU>] (showing that the estimated cost of adaptation is tenfold higher than actual adaptation flows); see also Dumisani Chirambo, *Increasing the Value of Climate Finance in an Uncertain Environment: Diaspora Financial Resources as a Source of Climate Finance for Sub-Saharan Africa*, 4 AIMS ENV'T SCI. 730, 733 (2017), <https://doi.org/10.3934/environsci.20176.730>.

185. Steve Chemaly & Olivia Radford, *Green Bonds – An Alternative Investment Opportunity*, NORTON ROSE FULBRIGHT: BLOG NETWORK (Mar. 25, 2021), <https://www.financialinstitutionslegalsnapshot.com/2021/03/green-bonds-an-alternative-investment-opportunity/> [<https://perma.cc/G6K9-TXNX>].

186. See Martin Dietrich Brauch & Brenda Akankunda, *Investment Governance in Africa to Support Climate Resilience and Decarbonization*, COLUM. CTR. ON SUSTAINABLE INV. (Dec. 10, 2021), <https://ccsi.columbia.edu/news/investment-governance-africa-support-climate-resilience-and-decarbonization> [<https://perma.cc/2A6N-CJQ6>] (discussing need for financial regulation and solutions).

187. See generally CLIMATE BONDS INITIATIVE, FSD AFRICA, THE NIGERIAN GREEN BOND MARKET DEVELOPMENT PROGRAM REPORT (2018–2021), <https://fsdafrica.org/wp-content/uploads/2022/04/Green-Bond-Impact-report-2018-2021.pdf> [<https://perma.cc/8EYQ-X75C>] (discussing successes of the Nigerian Green Bond Market Development Program).

188. See Daniel A. Farber, *Adapting to Climate Change: Who Should Pay*, 23 J. LAND USE & ENV'T. L. 1, 3 (2007), <https://dx.doi.org/10.2139/ssrn.980361> (stating that mitigation impact benefits the futures generation).

189. *Id.*

climate change. Denying the Global South funding for adaptation cannot be justified under the greenwashing argument.¹⁹⁰ Proper adaptation measures are not greenwashing. Instead of debating whether climate investment in Africa is a binary choice between mitigation and adaptation, financing should focus on measures that directly address climate change. For example, financing drainage systems in flood-prone areas is necessary to prevent flooding that would destroy farmland crops and displace the human population.

However, attracting private sector investments in adaptation measures is challenging due to a lower rate of return on investments in the sector when compared to mitigation investments, which promise a better return.¹⁹¹ Instead of debating whether to invest in mitigation or adaptation, developed economies and multilateral organizations should focus on implementing concrete adaptation measures that address climate change. It is not right to focus climate change funds on poverty reduction. Since private investments in adaptation measures are unattractive, domestic governments can sweeten the deal via local partnerships in concrete adaptation measures to de-risk the investments. Alternatively, governments can issue tax credits for investments in such sectors. Modeling adaptation implementation to place specific risks on domestic governments encourages investments in the sector. Nevertheless, not all kinds of adaptation measures lack profitable returns. For example, recycling plants in Africa have delivered returns on investments.¹⁹²

Scaling up private climate investment in Africa must include cohesive and bankable project plans indicating the sustainability of the proposed renewable projects. Proposed plans must include detailed feasibility studies showing inherent risks, market opportunities, and profits through all the stages of implementation of the program. Foreign lenders want to see how they will recoup their money. Showing them how, will convince lenders. Along this line, African governments at the national and sub-levels, including the local city levels, must create an enabling environment that de-risks local investment in mitigation and adaptation projects to spur investments in the sector.

Addressing the funding deficit will be incomplete without addressing the bureaucracy and bottlenecks associated with accessing climate funding in Africa. Firstly, countries need direct access to loans and services.

190. See generally *The Choice Between a Poorer Today and a Hotter Tomorrow*, *supra* note 175.

191. See Patrick Verkooilijen, *The Business Case for Climate Adaptation: Why It's a Profitable Investment*, GOLD STANDARD (2023), <https://www.goldstandard.org/blog-item/business-case-climate-adaptation-why-it%E2%80%99s-profitable-investment> [<https://perma.cc/M2ZE-3QEX>] (discussing the tendency of investors to perceive climate adaptation projects as a poor investment).

192. See, e.g., *Norfund Entering Plastic Recycling in Nigeria and Ghana*, NORFUND (July 13, 2023), <https://www.norfund.no/norfund-entering-plastic-recycling-in-nigeria-and-ghana/> [<https://perma.cc/R2DX-WGUE>].

Secondly, multilateral organizations and international finance organizations should relax stringent rules required for borrowing. Direct access to loans and finance reduces transaction costs.¹⁹³ The successful creation and implementation of direct access to green loans in Africa should serve as a template for other green loans. Mozambique, the Democratic Republic of Congo, and Tanzania each got direct access to \$25–\$30 million in funding.¹⁹⁴ Available funding programs should lower the creditworthiness requirement for African countries before issuing loans. The proliferation of similar funding opportunities and elimination of current intermediaries in climate financing is an opportunity to raise funding in Africa.

Green bonds are another opportunity to increase private sector investment in climate change in Africa. Studies show that capital markets respond to green bonds.¹⁹⁵ Nigeria is one of the first countries to introduce sovereign green bonds to finance climate change action in the region.¹⁹⁶ So far, institutional bottlenecks have prevented Africa from fully exploring the opportunity. Availability of untapped renewable energy resources in the continent justifies increased utilization of green bonds to finance green energy investments in the region.¹⁹⁷ Green bonds are also desirable in Africa because they strike a balance between yearning to address climate change and improving energy access without increasing greenhouse gas emissions.¹⁹⁸ Nigeria, for instance, enjoys abundant sunlight throughout most of the year, particularly in the northern region, and has adequate wind sites in the same areas.¹⁹⁹ It presents an opportunity to explore renewable energy projects in the region. Also, its several rivers and streams are opportunities to develop geothermal electricity.²⁰⁰

B. *Retooling Debt Forgiveness*

Africa is heavily indebted to foreign countries, private lending organizations, and multilateral organizations.²⁰¹ Debt forgiveness for climate investing is a valuable tool in addressing the global deficit funding of climate action. If it costs trillions of dollars to keep global warming at 1.5° C,²⁰² then financing climate action in Africa must be along

193. NAKHOODA ET AL., *supra* note 170, at 5.

194. *Id.* at 1.

195. Caroline Flammer, *Corporate Green Bonds*, 142 J. FIN. ECON. 499, 503–04 (2021), <https://doi.org/10.1016/j.jfineco.2021.01.010>.

196. FED. MINISTRY OF ENV'T, ABUJA, *supra* note 19, at 35.

197. Ford, *supra* note 129.

198. *See supra* notes 129–31 and accompanying text.

199. *See supra* note 130 and accompanying text.

200. *See supra* note 131 and accompanying text.

201. Sara Harcourt & Fiona Robertson, *African Debt*, ONE, <https://data.one.org/topics/african-debt/> [<https://perma.cc/R3NQ-XD6A>].

202. NARAN ET AL., *supra* note 150, at 4.

the same line. Africa's total debt at the end of 2022 stood at \$726.55 billion.²⁰³ Converting such debts to climate funding is essential to the climate finance impasse. Although, outright forgiveness is not practical considering other factors. However, the international community must agree on modalities for restructuring Africa's debt and channel such funding into mitigation and adaptation measures to fight climate change in Africa.

The available debt forgiveness options from the World Bank and the United Kingdom, which temporarily paused payment, are inadequate in addressing the challenge. The International Monetary Fund's calculations show that 34 of the 59 developing economies most vulnerable to climate change are in fiscal crisis.²⁰⁴ The World Bank's recent promise to pause debt repayment for poor countries hit by climate crises postpones doomsday.²⁰⁵ More so, it only addresses new loans and not old loans.²⁰⁶ If debt forgiveness must be used to finance climate action, the time is now, not tomorrow.

Debt forgiveness should be innovative. Extending the "debt-for-adaptation swap" to mitigation serves an innovative goal. The developed economies could also deliver climate funding by offering debt to pay for investments in clean energy projects in the developing countries. Alternatively, lending organizations could restructure African countries' debt to allocate the principal sum to finance clean energy in Africa while repaying the interest. The innovative debt forgiveness model boosts climate finance in Africa. It de-risks certain investments in Africa as it circumvents twisted financial systems in the African region. It also allays the fears of non-payment for services in countries in fiscal crises.

C. Forging Partnerships

Government partnerships can cushion the risks of low returns in adaptation investments and incentivize private investment. Federal, state, and local governments can partner to provide local resources and technical expertise as project consultants. Despite the Nigerian government's investment in adaptation strategies, specific sectors have not received funding. While the transportation, communications, industrial,

203. Doris Dokua Sasu, *Total External Public Debt in Africa in 2020 and 2021*, STATISTA (Sept. 29, 2022), <https://www.statista.com/statistics/1242745/total-external-public-debt-in-africa/> [<https://perma.cc/T7HZ-RG6Q>].

204. Kristalina Georgieva et al., *Swapping Debt for Climate or Nature Pledges Can Help Fund Resilience*, IMF BLOG (Dec. 14, 2022), <https://www.imf.org/en/Blogs/Articles/2022/12/14/swapping-debt-for-climate-or-nature-pledges-can-help-fund-resilience> [<https://perma.cc/W7P5-BMV5>].

205. See Fiona Harvey, *World Bank Offers Developing Countries Debt Pauses If Hit by Climate Crisis*, GUARDIAN (June 22, 2023, 2:06 PM), <https://www.theguardian.com/environment/2023/jun/22/world-bank-offers-developing-countries-debt-pauses-if-hit-by-climate-crisis> [<https://perma.cc/GAW6-LW5U>].

206. *Id.*

and commercial sectors are underfunded, the primary focus has been on irrigation projects, and flood and erosion control.²⁰⁷ These are not unconnected to low-capacity management opportunities and supposed low emissions in the sector.²⁰⁸ It breeds danger to ignore the industry in climate financing as the cumulative effects will impact the progress made so far.

Another reason for the neglect appears to be a lack of return on investment in the region, particularly in adaptation measures.²⁰⁹ Private investors believe that the rate of return is lower when compared to mitigation strategies and fear that, due to climate change's impact variability, there are heightened risks in investing in adaptation measures.²¹⁰ Governments alone cannot support the sector. For example, in Nigeria, although the Nigerian government has invested in adaptation strategies, several sectors have not been funded. Transportation, communications, industrial, and commercial sectors have been underfunded while significant focus has been on irrigation projects, flood, and erosion control.²¹¹ However, ignoring certain sectors in financing climate adaptation is dangerous as the cumulative effects could undermine progress made so far. That said, local governments must redesign extant projects such as "railways, renewable energy investment, afforestation, climate smart agriculture, and projects to limit gas flaring pursued by the various ministries, departments and agencies (MDAs) . . . as green investments."²¹²

As mentioned earlier, government partnerships can cushion the risks of low returns in adaptation investments. Federal, state, and local governments can partner by providing local resources and technical expertise as project consultants. Government patronage in the aforementioned sectors is vital in attracting private climate finance in the fight against climate change, especially in cases where the private investor has risked massive investment. For example, in the transportation sector, the Nigerian government spent about \$73 million to buy high-end gasoline/diesel-powered sports utility vehicles for its new National Assembly members.²¹³ Meanwhile, the government neglected a local

207. Chukwuemeka Onyebuchi Onyimadu & Daniel Sunday Uche, *Evaluating the Nigerian Government's Financial Obligations to Climate Change Adaptation Strategies*, 24 CLIMATE SERVS., Dec. 2021, at 1, 12, <https://doi.org/10.1016/j.cliser.2021.100261>.

208. *Id.*

209. Esther Sekyoung Choi et al., *What It Takes to Attract Private Investment to Climate Adaptation*, WORLD RES. INST. (May 10, 2023), <https://www.wri.org/insights/private-sector-climate-adaptation-finance> [<https://perma.cc/59ZV9FWU>].

210. *See supra* note 191 and accompanying text.

211. *See* Onyimadu & Uche, *supra* note 207, at 12 (exploring the failure of the current institutions to appropriately deploy their resources to incentivize green financing in Nigeria's economy).

212. Okereke & Ugochuku, *supra* note 124.

213. Emma Amaize, *N57bn SUVs: Senators, Reps Insensitive, Shameless, Nigerians Blast Lawmakers*, (Oct. 28 2023) VANGUARD <https://www.vanguardngr.com/2023/10/n57bn-suv-senators-reps-insensitive-shameless-nigerians-blast-lawmakers/>; *see also* GreatDave, *Luxury on Wheels: Nigerian Lawmakers to Cruise in N300 million Bulletproof Vehicles*, AUTO J. AFR. (July 17, 2023), <https://autojournal.africa/>

auto manufacturing company capable of building natural gas-powered vehicles in preference of foreign luxury cars.²¹⁴ The project is counter-productive to climate change goals and discourages local investments in green energy projects.

On the other hand, government patronage incentivizes clean energy investment in mitigation and adaptation by providing risk assurance signals to local and foreign regional investors. African governments must begin to think seriously about local partnerships to restore investor confidence.

D. *Building Stronger Financial Institutions*

One of the challenges identified by global institutions in climate finance in Africa is the lack of solid financial institutions and the capacity to manage climate funds. The fear of mismanagement and the inability of the funds to reach targeted areas hinders climate investments in Africa. Building a stronger financial framework that is open and accountable restores public and private investor confidence. Equally, it incentivizes more investment in the sector. However, such investment is not possible without regulators stepping in to structure an open, transparent financial network. Primarily, such a transparent network should indicate the identities of persons and areas that benefitted from any disbursed climate funds. Allowing citizens to audit the disbursements engenders greater accountability.

Secondly, localizing the channeling of the funds through community banks could help eliminate risks of mismanagement. Not only that, community banks are well situated within the local community and have expertise in adaptation measures that better benefit the community. Community banks are already filling the void of formal banking institutions in rural villages.²¹⁵ They could continue that critical work in the climate financing regime.

Lastly, training and retraining of staff through capacity-building workshops improves efficiency and broadens more comprehensive service delivery within the domestic climate financing landscape. Capacity training also reduces lapses that corrupt elements may use to game the system.

luxury-on-wheels-nigerian-lawmakers-to-cruise-in-n300-million-bulletproof-vehicles/ [https://perma.cc/NJS5-TY5X].

214. See Guardian Nigeria, *Fuel Subsidy: Innoson Unveils Gas Powered Vehicles*, GUARDIAN (June 7, 2023, 1:00 AM), <https://guardian.ng/news/fuel-subsidy-innoson-unveils-gas-powered-vehicles/> [https://perma.cc/L3NR-9H42] (discussing the availability of locally manufactured natural gas-powered vehicles).

215. O. Felix Ayadi et al., *The Role of Community Banks in Economic Development: A Nigerian Case Study*, 32 SAV. & DEV. 159, 164 (2008).

V. CONCLUSION

We have surpassed global warming, and we are now in the era of global boiling due to climate change.²¹⁶ Climate change impacts in Africa are proliferating. The paucity of climate finance in Africa has made the effects of climate change more pronounced in the region. The inability of the region to fund green investments has left it behind in the energy transition movement. It portends a dangerous trend. However, finding realistic ways to pull Africa out of the immediate climate crisis and set it on a path of avoiding devastating climatic impact must rely on innovative approaches.

Attracting private climate investments in Africa is challenging because doing so relies on the ability to generate returns on investment. Even when financing is available, mitigation efforts take a considerable chunk of climate finance flow into Africa, ignoring considerable adaptation measures. The expected return on investments overshadows the humanitarian need to address climate change. Climate change investments fail to account for disproportionate impact on vulnerable African communities resulting from the legacy of pollution by industrialized nations and the continent's unique social and physical vulnerabilities. The fight against climate change is collective, and that understanding should drive investment in the African region. If the world is to decarbonize, developed countries must assist Africa through sustainable climate finance.

We must also understand that there is no binary choice regarding financing climate change actions. Both mitigation and adaptation measures are necessary in fighting climate change. Any realistic climate finance measures should address both quickly. Conversations about the clean energy transition should revolve around urgency and justice.²¹⁷ The time to lift the Global South and Africa is now.

216. U.N. Secretary-General, Opening Remarks at Press Conference on Climate (July 27, 2023), <https://www.un.org/sg/en/content/sg/speeches/2023-07-27/secretary-generals-opening-remarks-press-conference-climate> [<https://perma.cc/FC98-RXB4>].

217. See U.N. Climate Change, *Speech: Mia Motley, Prime Minister of Barbados at the Opening of the #COP26 World Leaders Summit*, YouTube (Nov. 1, 2021), <https://www.youtube.com/watch?v=PN6THYZ4ngM> [<https://perma.cc/429P-FHZ3>].

