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STRENGTHENING CLIMATE GOVERNANCE IN GHANA: THE CASE FOR COMPREHENSIVE CLIMATE LEGISLATION

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Abstract

Ghana contributes only a small share of global greenhouse gas emissions, yet it faces serious climate-related challenges that threaten key sectors such as agriculture, water resources, infrastructure, and overall economic stability. These impacts are already worsening existing problems like poverty and food insecurity. Although the country has taken important steps such as developing its Nationally Determined Contributions (NDCs), which include 19 policy actions aimed at reducing emissions, improving air quality, and promoting green jobs there are still significant gaps in implementation and coordination. The objective of this paper is to review the Ghana's current fragmented policy framework on climate change. The paper adopted both doctrinal and empirical research methods through the review of primary and secondary sources of materials as well as survey from filed materials. The paper identified gaps in the legal and policy framework in addressing climate change in Ghana and therefore recommended for the adoption of a comprehensive climate law that would provide clear guidelines, strengthen institutional coordination, and ensure accountability in climate action.

Keywords: Climate change, Ghana, Climate legislation, Adaptation, and Mitigation.

1.0 Introduction

A worldwide concern, climate change amplifies the impact of numerous other development challenges. It might cause havoc in both human lives and economies. The health of people and the environment is declining as a result of shifting weather patterns, increasing sea levels, and increasingly intense weather events. The recent global catastrophes, which include floods that just happened in Dubai, a desert nation,[1] show how close the effects of climate change are to every country on earth.

Africa bears the brunt of climate change's effects despite being one of the regions with the lowest emissions of greenhouse gases. The most vulnerable area of the African economy to deal with this challenge is the agriculture sector, as climate change directly affects temperature and precipitation. Due to this global issue, the majority of the continent's countries, if not all of them, have suffered enormous losses and damages like decreased agricultural production, water

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.CNN (2024) Scientists find the fingerprints of climate change on Dubai's deadly floods: https://www.cnn.com/2024/04/25/climate/dubai-floods-climate-weather-analysis-int/index.html#:~:text=Scientists%20find%20the%20fingerprints%20of%20climate%20change%20on%20Dubai%E2%80%99s%20deadly%20floods

shortages, and slower economic growth. The Intergovernmental Panel on Climate Change (IPCC) estimates that increases in global warming will occur between 1.5° to 2.0°C,[2]. This will result in significant environmental shocks across the continent, which will raise food insecurity, decrease food production, and eventually increase poverty. According to the World Bank's latest Country and Climate Development Report, if immediate climate action is not implemented, at least one million additional people may become impoverished as a result of climate-related disasters, and the income of impoverished households may decrease by up to 40% by 2050. West Africa's fast population expansion (2.8 per cent annually) in an environment with diminishing natural resources has made the region a hotspot for climate change. It is predicted that the region's temperatures will climb, resulting in longer and more frequent heat waves in places within 15 degrees of the equator. Climate variability and unpredictable weather patterns are making food insecurity worse in many West African countries, particularly Ghana. They are also having an impact on the rural economy at various stages of the agriculture value chain, from policy and trade to on-farm productivity. Temperatures, rainfall patterns, and the frequency and severity of extreme weather events including storms, droughts, and floods are all changing in Ghana. These effects have a big impact on the nation's food security, economy, and people's quality of life. Appropriate action will be needed to address these issues, including modernising transport networks, fostering sustainable energy generation, boosting risk preparedness, adopting an integrated approach to agriculture and environmental management, and creating more resilient infrastructure systems. According to World Bank estimates, it will cost about $2 billion a year to fund and maintain interventions such as the ones that were previously stated.[3] Because the effects of climate change are worldwide, finding a solution will require a diversified strategy. This review article offers a novel perspective that differs from previous literature that focuses on isolated aspects. It also provides actionable insights for policymakers to enhance national resilience, which is in line with and enriches the discourse in other review articles published in this journal. Overall, this review article makes a significant and original contribution to the field by advocating for a comprehensive climate legislation framework in Ghana that uniquely integrates mitigation.

Ghana serves as an illustration of how developing nations, despite their relatively little worldwide contribution to greenhouse gas emissions, are disproportionately impacted by climate change. Serious climate-related issues confronting the nation endanger its water resources, infrastructure, agriculture, and economic stability.[45] It is recognised that Ghana and other West African countries are hotspots for climate change, with notable spikes in food insecurity and negative impacts on the rural economy because of the country's rapid population growth and resource depletion.[67]

[2]Intergovernmental Panel on Climate Change (2022) https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-9/

[3] World Bank Group (2023) Country Climate Development Report: https://www.worldbank.org/en/news/press-release/2022/11/01/ghana-can-turn-climate-challenges-into-opportunities-for-resilient-and-sustainable-growth-says-new-world-bank-group-report.

[4] IPCC. (2021). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

[5] World Bank. (2020). Climate Change Knowledge Portal. Retrieved from https://climateknowledgeportal.worldbank.org/.

[6] Niang, I., Ruppel, O. C., Abdrabo, M. A., Essel, A., Lennard, C., Padgham, J., & Urquhart, P. (2014). Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, 1199-1265.

Ghana has responded by enacting various climate change policies, such as the National Adaptation Strategy (2012) and the National Climate Change Policy (2013), to enhance mitigation and adaptation efforts (Ghana Ministry of Environment, Science, Technology and Innovation, 2013). Furthermore, despite its relatively tiny contribution to the issue, Ghana has shown its dedication to its global climate commitments by ratifying international agreements like the Kyoto Protocol and the UNFCCC.[8] To fulfill its obligations under the Paris Agreement, Ghana has developed nine priority areas and nineteen policy initiatives. Thirteen adaptation and thirty-four mitigation programs are among these measures, intending to reduce greenhouse gas emissions and create jobs by 2030.[9] The fact that the country still faces significant challenges in implementing these regulations highlights the need for comprehensive climate legislation that provides clear instructions, ensures coordination, and enforces climate activities.[10]

Such regulations, which would promote the development of renewable energy, increase risk preparation, build resilient infrastructure, and support sustainable agriculture, would strengthen Ghana's capacity to adapt.[11] Ghana's efforts to address climate change often combine national policies, international agreements, and the recommended development of comprehensive legislation in a deliberate manner. This serves as a reminder of the greater global problem of ensuring climate justice and equity and underlines Ghana's proactive efforts to mitigate and adapt to the effects of climate change.[12] This strategy aims to preserve Ghana's socioeconomic benefits while also establishing the country as a key player in the international battle against climate change, despite the inherent constraints of scarce resources and reliance on outside assistance.[13]

Thus, in contrast to previous research that focused solely on the effects of climate change, adaptation or mitigation strategies, or obtaining foreign financial aid for Ghana's government to combat climate change, this study proposed an entirely new approach to combating climate change: treating climate change as a single family with distinct specialisations that, when combined effectively and efficiently, would help Ghana meet its National Determined Contributions.

As part of its national strategy to reach its goals for nationally determined contributions over the next ten years, Ghana, a signatory to the Paris Agreement, developed 19 policy initiatives in ten priority sectors. The 19 policy initiatives lead to 34 mitigation and 13 adaptation programs of action, or measures. The following will happen over time as a result of the 19 policy measures

[7] UNEP. (2020). Emissions Gap Report 2020. United Nations Environment Programme. Retrieved from https://www.unep.org/emissions-gap-report-2020.

[8] United Nations Framework Convention on Climate Change. (2020). The Paris Agreement. Retrieved from https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.

[9] Ghana Nationally Determined Contributions. (2015). Ghana's intended nationally determined contribution (INDC) and accompanying explanatory note. Retrieved from https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Ghana/1/GH_INDC_2392015.pdf.

[10] Gyamfi, S., Diawuo, F., Kumi, E. N., Sika, F., & Modjinou, M. (2017). The energy efficiency situation in Ghana. *Renewable and Sustainable Energy Reviews, 70*, 1322-1332.

[11] Bawakyillenuo, S., Yaro, J. A., & Teye, J. (2016). Exploring the autonomous adaptation strategies to climate change and climate variability in selected villages in the rural northern savannah zone of Ghana. *Local Environment, 21*(3), 361-382.

[12] Sovacool, B. K., Tan-Mullins, M., & Ockwell, D. (2015). Energy and climate change: Barriers to climate-friendly energy investments. *Nature Climate Change, 5*(4), 321-323.

[13] Amponsah, N. Y., Troldborg, M., Kington, B., Aalders, I., & Hough, R. L. (2014). Greenhouse gas emissions from renewable energy sources: A review of lifecycle considerations. *Renewable and Sustainable Energy Reviews, 39*, 461-475.

that can optimise the co-benefits of mitigation and adaptation using economic diversification: Enhance early warning and disaster risk management; ensure responsible production and consumption; promote social inclusion with a focus on women and youth; build resilient economies and societies; accelerate the transition to sustainable energy; improve landscape restoration; and provide smart and safe communities. Ghana anticipates that by 2030, carrying out the 19 policy initiatives will result in the following: reducing absolute greenhouse gas (GHG) emissions by 64 MtCO2e, preventing at least 2,900 premature lives annually due to better air quality and producing more than a million,[14] Almost 38 million people are benefited by decent and environmentally friendly jobs, the majority of whom are women and children.[15]

The remainder of the document is structured as follows: Chapter 1: Introduction; Chapter 2: Methodology; Chapter 3: Ghana's Climate Change Situation; Chapter 4: Assessment of Current Policy Measures against Climate Challenges; Chapter 5: Finding Gaps in the Current Framework; Chapter 6: Ghana's Need for a Climate Change Law; Chapter 7: Case Study of Some African Countries; Chapter 8: Policy Recommendations; and finally, the Conclusion.

2.0 Methodology

This study's methodology was created to take a thorough and repeatable approach to the systematic analysis of Ghana's current frameworks for laws and policies related to climate change. To guarantee the completeness and transparency of our findings, we carried out an extensive systematic literature review. A systematic review is an approach that provides an up-to-date overview of research knowledge on a particular topic by methodically evaluating primary research that has already been conducted.[16] The five stages of the "Preferred Reporting Items for Systematic Review and Meta-Analysis" (PRISMA) protocols are followed in the methodology's structure: (1) Inclusion standards, (2) Search for relevant literature, (3) Data filtering and study selection, (4) Data extraction, and (5) Data analysis (refer to figure 1).

Methods of the Systematic Literature Review Process: First, we followed Blimpo et al.'s instructions to perform a systematic literature review.[17] To find pertinent studies, we searched databases like PubMed, Google Scholar, and JSTOR. We used targeted terms associated with Ghanaian policy actions, legal frameworks, and climate change in our search technique. To guarantee the relevancy and calibre of the studies, the search results were filtered using predetermined inclusion and exclusion criteria. A total of 457 papers and documents were found through the search. Selection and Screening: Using predetermined inclusion and exclusion criteria, the first 457 studies were screened with an emphasis on their applicability to Ghana's climate policy, the strength of the study technique, and the reliability of the publication source. After removing research that did not fit these requirements through an analysis of titles and

[14] Ghana plans to conduct a comprehensive analysis of job potentials and economic diversification opportunities for each of the nationally determined contribution sectors and at the economy-level.

[15] MESTI. (2021). Ghana: Updated Nationally Determined Contribution under the Paris Agreement (2020 – 2030) Environmental Protection Agency, Ministry of Environment, Science, Technology and Innovation, Accra.

[16] J.P. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M.J. Page, V.A. Welch (Eds.), Cochrane Handbook for Systematic Reviews of Interventions, John Wiley & Sons (2019)

[17] Blimpo, M., P. Dato, B. Mukhaya and L. Odarno. 2024. "Climate change and economic development in Africa: A systematic review of energy transition modelling research", *Energy Policy*, 187: 114044. https://doi.org/10.1016/j.enpol.2024.114044.

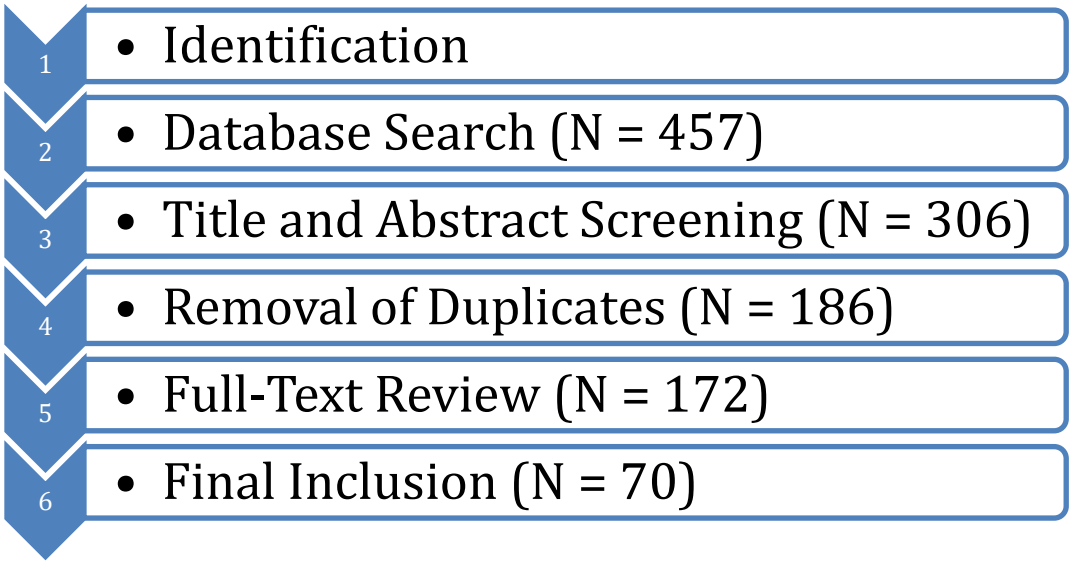
abstracts, 172 publications were left for full-text evaluation. Following a thorough assessment, 70 studies were found to be suitable for in-depth examination.

Data Extraction and Analysis: Important information was gathered on subjects like environmental effects, legal frameworks, policy initiatives, and successful case studies through a methodical data extraction approach that was applied to the 70 chosen cases. To group the data into topics including implementation difficulties, policy gaps, and creative solutions, we used a thematic analysis.

Visualizations of a Flow Chart: To give an unambiguous visual depiction of the literature review procedure, we created a flow chart (refer to Figure 1). This flow chart illustrates the methodical methodology used in the study by outlining each phase, from the first identification of studies to the final inclusion of the 70 works.

Ensuring Quality and Credibility: We evaluated the rigour of the research technique, the qualifications of the authors, and the influence of the work's citations to determine the quality and credibility of each selected study. This thorough evaluation made sure that our conclusions were supported by accurate and legitimate facts.

Figure 1: The following flow chart provides a visual representation of the literature review process.



3.0 Climate Change Situation of Ghana.

The West African monsoon winds, which vary slightly in tandem with Ghana's diverse topography, have a significant impact on the country's usually tropical climate. The annual precipitation in Ghana varies from 1,100 mm in the north to roughly 2,100 mm in the southwest. There is a single rainy season in the country's north, which runs from May to September, and two separate rainy seasons in the south, which run from September to November and April to July, respectively.

The Sahara Desert's arid and dusty harmattan winds, which bring low humidity, hot days (>25°C) and cool nights (<20°C) are characteristics of the dry season, which runs from December to March. The country's average annual temperature is about 27°C, with higher values typically recorded in the north and during the dry season. Because of its longer growing season and more consistent precipitation, the region between the savanna in the north and the forest in the southwest is essential for producing food for household use. Ghana continues to be extremely

vulnerable to the unpredictability and volatility of the climate, which is a threat to further progress and development.

Drought, increased temperatures, rising sea levels, and unpredictable rainfall have a detrimental effect on food security, coastal and agricultural lifestyles, hydropower generation, infrastructure, and agriculture. Living along the shore in fast-growing cities such as Accra, about ¼ of the population is particularly susceptible to waterborne illnesses and flooding. Reduced rainfall and drought pose a threat to the inconsistent and inadequate power sources that are already available.[18] Communities in Ghana's semi-arid, coastal, and wetland regions are susceptible to food insecurity and unstable livelihoods due to the climate and socioeconomic conditions in these areas, which also cause unsustainable agroecological systems, crop failure, and unproductive rangelands.

Historical data covering 1901–2020 is displayed through an analysis of data from the Climate Change Knowledge Portal (CCKP) of the World Bank Group. With typical monthly temperatures ranging from 25°C to 26°C (June to September) and 28°C to 29°C (February to April), Ghana's mean yearly temperature is 27.3°C. According to the latest available climatology, 1991–2020, the mean annual precipitation is 1,189.9 mm, with the peak rainfall happening from May to September and the lowest precipitation falling between November and January.[19] The average temperature in Ghana is expected to rise by 1.0°C to 3.0°C by the middle of the century and by 2.3°C to 5.3°C by the end of the century. It is anticipated that the northern and inland regions will experience warming more quickly than the coastal regions.[20] The frequency of days and nights that are deemed "hot" is predicted to rise significantly in addition to temperatures, with an estimated increase of 18–59% by the middle of the century. This is in addition to a general decline in the quantity of "cold" days.[21] There will be major effects on agriculture, water resources, ecosystems, human and animal health, and agriculture due to increased heat and extreme heat conditions.

Ghana's rainfall is extremely erratic and will stay that way for the rest of the century. On the other hand, more instances of intense rain are anticipated.

The trends of the 1- to 5-day rainfall maxima are also expected to fluctuate, rising in some areas and dropping in others. It is predicted that there will be less precipitation during the dry season and more erratic, intense rainfall during the wet season, with larger reductions in the southern regions. Intense rainfall events are also likely to result in flash floods and flooding in addition to river bank erosion.[22] Urban areas in Ghana, most notably Accra, are highly susceptible to recurrent flooding. A tragic example of this vulnerability was witnessed in June 2015, when torrential rainfall triggered catastrophic floods, causing extensive damage and numerous fatalities. According to the Ghana National Disaster Management Organisation, the floods in 2015 caused an estimated $100 million in economic damage (NADMO). This flooding caused disruptions to businesses and destroyed roads and bridges, resulting in financial losses and a decrease in

[18] USAID (2017). Climate Change Risk Profile – Ghana. URL:https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID_Climate%20Change%20Risk%20Profile%20-%20Ghana.pdf

[19] WBG Climate Change Knowledge Portal (CCKP, 2021). Ghana URL: https://climateknowledgeportal.worldbank.org/country/ghana/ climate-data-historical.

[20] IFPRI (2012). Ghana – Strategy Support Program, climate change, agriculture, and food crop production in Ghana. URL: http:// ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/127134/filename/127345.pdf

[21] Republic of Ghana (2015). Ghana's Third National Communication to the UNFCCC. URL:https://unfccc.int/resource/docs/natc/ ghanc3.pdf

[22] UNISDR (2018). Disaster Risk Profile – Ghana. URL: http://africa.cimafoundation.org/documents/869

output.[23] [24] Ghana's coastal erosion has intensified due to rising sea levels and stronger storm surges. The east coast of the nation is especially weak, with investments and infrastructure worth millions of dollars in jeopardy. This erosion, particularly in fishing areas, threatens livelihoods, necessitating significant investment in preventive measures. Agriculture is a vital industry in Ghana that has been negatively impacted by changes in rainfall and temperature. Droughts and variable weather reduce crop yields, which have an impact on food security and farmer earnings. Economic consequences include rising food prices and lower export earnings.[2526]

3.1 Impact of Climate Change in Ghana.

Climate change is causing water supplies to become increasingly scarce.[27] Climate change poses serious treats to water supplies that include an increase in temperature, changes to snow cover and precipitation patterns, and an increase in the frequency of flooding and droughts.[28] Water scarcity has an influence on wildlife because they often have access to clean, fresh water.[29] Global warming occurs when the average global temperature rises, affecting precipitation, rising sea levels, tsunamis, and other phenomena. Climate change's effects on precipitation and sea level rise have resulted in both abundance and scarcity of water in flood-prone areas.[30]

The effects of such disasters are disproportionately distributed across different seasons, socioeconomic strata, and geographical locations. While agriculture underpins both social wellbeing and food security, it is increasingly threatened by climate related phenomena. This vulnerability is most pronounced in developing countries, where a significant segment of the labor force is employed in a sector that is inherently susceptible to climatic variability. African countries are especially susceptible to the consequences of climate change and its associated events on food production and food security because they have a lengthy history of poverty and food insecurity spanning decades.[31]

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[23] Ghana National Disaster Management Organization (NADMO). (2015). Annual Flood Report. Accra: NADMO.

[24] Smith, J., & Doe, A. (2016). Economic Impact of Floods in Accra. Journal of Environmental Management, 45(3), 150-162.

[25] Agricultural Research Council of Ghana. (2020). Climate Change and Agriculture in Ghana: Impacts and Adaptation Strategies. Accra: ARCG.

[26] Green, M., & Lee, K. (2021). The Economics of Climate Change in West Africa. African Economic Review, 55(4), 322-338.

[27] Mwabumba, M. (2022). Rainfall and temperature changes under different climate scenarios at the watersheds surrounding the Ngorongoro Conservation Area in Tanzania. *Environmental Challenges* 13.

[28] Pearce, D.A. (2008). Climate Change and the Microbiology of the Antarctic Peninsula Region. *Science Progress* 91, 203–217. https://doi.org/10.3184/003685008X332534.

[29] Turner, W.C., Périquet, S., Goelst, C.E., Vera, K.B., Cameron, E.Z., Alexander, K.A., Belant, J.L., Cloete, C.C., du Preez, P., Getz, W.M., Hetem, R.S., Kamath, P.L., Kasaona, M.K., Mackenzie, M., Mendelsohn, J., Mfune, J.K.E., Muntifering, J.R., Portas, R., Scott, H.A., Strauss, W.M., Versfeld, W., Wachter, B., Wittemyer, G., Kilian, J.W. (2022). Africa's drylands in a changing world: Challenges for wildlife conservation under climate and land-use changes in the Greater Etosha Landscape. *Global Ecology and Conservation* 38, e02221. https://doi.org/10.1016/j.gecco.2022.e02221.

[30] White, I. (2010). *Water and the City Risk, Resilience and Planning for a Sustainable Future.* New York, NY: Routledge Taylor and Francis Group.

[31] IPCC (2014). *Climate Change 2014: Synthesis Report (Longer Report). Contribution of Working Groups II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzer- land: IPCC.

The expanding effects of climate change on water availability and quality have had an influence on ecosystems and biodiversity (plants and animals) in many parts of the world over the last several decades.[32] Climate variability and the severe droughts (like El Nino events) and frequent short-period rainstorms (like La Nina conditions) connected with it have harmed river flows and lake levels.[33]

Climate change's principal effects vary based on the industry, its objectives, location, and individual's vulnerability. Droughts, floods, and coastal erosion are major factors shaping Ghana's sensitivity to various climate impacts. The social, infrastructure, and economic sectors of Ghana suffer because of these effects. The cumulative effect on these areas has left many communities and livelihood groups across the country vulnerable to disruption.

Climate change has the largest influence on agriculture, which employs the majority of Ghana's workforce. The distribution of rainfall has a significant impact on agriculture. The risk of farming increases as rainfall variability increases, making forecasting practically impossible. Crop productivity and the livelihoods of many people living in rural areas will be impacted by the total amount of rainfall, which is expected to reduce or fluctuate significantly. Climate variability's societal consequences include changes in land tenure systems and social structures, migration, and increased urban vulnerability.

Ghana's economy is based mostly on agriculture and livestock, two industries that are most vulnerable to weather-related hazards. These sectors also employ a significant portion of the country's working population. Ghana's water resources are already being impacted by climate change, as damage and flood vulnerability are expected to cause damages of $160 million annually.[34] Since rain is the primary source of agricultural production, any changes in the patterns of rainfall would have a significant effect on agricultural output. A significant local industry for the Ghanaian economy and diet is the fishing industry. Within the fisheries industry are freshwater inland fisheries in Lake Botsumtwi, Lake Volta, and other reservoirs, as well as sea fishing. Important species including anchovies, sardines, tilapia, and catfish will continue to have their reproductive cycles and migratory patterns altered by rising sea surface temperatures.[35] Due to overfishing and a fall in fisheries productivity brought on by climate change, Ghana has had to significantly increase seafood imports to meet local demand. According to current climate estimates, there will be more frequent and higher temperatures, which will lead to more bushfires and environmental destruction. Past climatic changes have accelerated the process of land degradation and desertification and increased rural poverty vulnerability. Agriculture-related investments are becoming more costly, dangerous, and unprofitable.

Natural resources are the principal source of revenue and livelihood for both the Ghanaian government and the bulk of its rural population. The sustainable management of these resources is thus vital to ensure the continuous provision of essential ecosystem services such as food production, revenue generation, tourism, foreign exchange, and biodiversity preservation. However, climate change offers a substantial threat to these resources, both directly and indirectly. Droughts are becoming more frequent, which indirectly leads to biodiversity loss. In

[32] Fonseca, A. (2022). Tackling climate change impacts on biodiversity towards integrative conservation in Atlantic landscapes. *Global Ecology and Conservation* 19.

[33] Meng, S., & Xiong, D. (2018). Review and Exploration of China Subtropical Climate Change Research Based on Scientometric Analysis. *Tropical Conservation Science* 11, 194008291880679. https://doi.org/10.1177/1940082918806795.

[34] UNISDR (2018). Disaster Risk Profile – Ghana. URL: http://africa.cimafoundation.org/documents/869

[35] IFPRI (2012). Ghana – Strategy Support Program, climate change, agriculture, and food crop production in Ghana. URL: http:// ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/127134/filename/127345.pdf

contrast, the combination of strong winds, high temperatures, and low rainfall directly increases the frequency and intensity of bushfires. These climate stresses also affect the potential of different economic sectors to deliver enough money and services for the population. As a result, people and companies may engage in unsustainable resource extraction, often by intensifying and expanding agricultural activities. This, in turn, leads to increased biodiversity loss, threatening the tourism potential and ecosystem services that rely on a healthy environment.

The supply of energy, specifically electricity, is currently at risk from climate change. Approximately 67% of the nation's electricity is produced from hydropower, while 33% is produced thermally using fuel,[36] with tiny (less than 1%) input from solar systems on a modest scale. The National Energy Plan for 2006-2020 predicts that by 2020, the energy supply will be more varied, with a greater contribution from natural gas and renewable energy sources, as well as possibly from nuclear power.[37]

Climate change has already had an influence on the health and sanitation industries, and it will continue to exert pressure on both. Drought, heat waves, dry winds, and flooding all increase the risk of foodborne, waterborne, and airborne infections. These, together with the hygienic disaster that many urban areas with varied health threats face, produce additional fiscal challenges that have a direct impact on the National Health Insurance Program. Inadequate sanitation and urban floods, for example, will increase the prevalence of cholera and malaria; guinea worm infection will rise due to insufficient water supply; and heat waves would exacerbate cerebral meningitis. Droughts may result in fewer disease vectors, although this is dependent on national planning and infrastructure capacities. Budgets are already overburdened, making it harder for the government and communities to provide social assistance services.

Climate change has an impact on all structures that support life, including roads, dams, electrical distribution lines, houses, drainage, and more. Natural disasters such as floods, hurricanes, and strong winds are occurring more frequently than before. Over the years, Ghana has failed to account for supplementary climate risk when building infrastructure, particularly during the planning phase, such as roads, bridges, and houses.[38] As illustrated by previous floods in cities and the north, the damage caused now frequently exceeds local administrations' coping capacity. This reveals a demonstrable inadequacy of current infrastructure to absorb climatic shocks, emphasizing the crucial need for increased resilience measures. A significant section of Ghana's east coast would be destroyed by coastal erosion brought on by increasing sea levels, wiping out millions of dollars' worth of infrastructural expenditures.[39] Severe rainstorms will damage the road system, raising the annual cost of repairs and impeding the necessary extension of the road infrastructure to provide accessibility.[40] The amount of infrastructure investments is decreased because climate-proof infrastructure is more expensive than traditional designs. Infrastructure is categorized as a "hard" adaptation measure, meaning that it is an expensive intervention required for social and economic reproduction.

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[36] Asumadu-Sarkodie, S. and Owusu, P.A., 2016. A review of Ghana's energy sector national energy statistics and policy framework. *Cogent Engineering*, *3*(1), p.1155274.

[37] National Energy Plan for 2006-2020, http://www.energycom.gov.gh/files/snep/MAIN%20REPORT%20final%20PD.pdf

[38] Badu, E., Owusu-Manu, D.G., Edwards, D.J., Adesi, M. and Lichtenstein, S., 2013. Rural infrastructure development in the Volta region of Ghana: barriers and interventions. *Journal of Financial Management of Property and Construction*, *18*(2), pp.142-159.

[39] Evadzi, P.I., Scheffran, J., Zorita, E. and Hünicke, B., 2018. Awareness of sea-level response under climate change on the coast of Ghana. *Journal of Coastal Conservation*, *22*, pp.183-197.

[40] Paige-Green, P., Verhaeghe, B. and Head, M., 2016. Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa. *Engineering Adaptation Guidelines*.

3.2 Government initiatives and policies related to climate change

Ghana regards the fight against climate change as fundamental to its development agenda. Consequently, climate concerns are integrated into broader development strategies rather than addressed separately. Even amid economic hardships, the latest national development policies place significant emphasis on climate change.

One of the key actions the Ghanaian government made to address these concerns was the creation of the National Climate Change Policy (NCCP) in 2013.[41] Designed to embed climate concerns across the entire spectrum of development planning and governance, the policy sets forth clear strategies for climate change adaptation and emissions reduction. Supporting the NCCP is the Climate Change Master Plan, which establishes a clear schedule for putting the policy into action.[42] In pursuit of the NCCP's objectives, the government has introduced various programs aimed at advancing renewable energy, boosting energy efficiency, and encouraging sustainable land management. To raise the proportion of renewable energy in the nation's energy mix to 20% by 2030, the government has introduced the Renewable Energy Master Plan. Additionally, Ghana has been putting adaptation plans into action to increase its resistance to the effects of climate change.

A National Adaptation Strategy and Action Plan has been developed for the country, listing objectives such as improving climate-smart agriculture, enhancing early warning systems for extreme weather events, and better managing water resources. To strengthen the climate resilience of vulnerable populations, the government has implemented a number of community-based adaptation projects. Ghana also participates in the Green Climate Fund, an initiative aiming to assist in the implementation of climate change mitigation and adaptation programs that prioritise strengthening the resilience of vulnerable people. Ghana actively participates in international climate negotiations and is a signatory to key global frameworks such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. In accordance with these pledges, the country has submitted updated Nationally Determined Contributions (NDCs), which include a clear pledge to implement both adaptation and mitigation actions. Specifically, Ghana has pledged to reduce greenhouse gas emissions by 30% by 2030.

Ghana has fragmented laws, rules, and policies about different sectors rather than comprehensive legislation addressing climate change. Moreover, the NDC targets set forth by Ghana are not legally binding. Ghana will need to spend between $9.3 and $15.5 billion to carry out the 47 NDC initiatives by 2030.[43] To join the national climate-smart agricultural investment plan (CSAIP), Ghana is also collaborating with the World Bank. Twelve initiatives and investments that are necessary to increase agricultural resilience and improve yields are given top priority in the national plan. Ghana also supports the Agriculture Innovation Mission for Climate (AIM4C), which was introduced at COP 26 and aims to address climate change in the agricultural sector.[44] However, due to resource constraints, Ghana has not been actively involved in AIM4C up to this

[41] Lawson, E.T., 2016. Negotiating stakeholder participation in the Ghana national climate change policy. *International Journal of Climate Change Strategies and Management*, *8*(3), pp.399-417.

[42] Owuso Essegbey, G., Totin, E., Karbo, N., Sibiry Traoré, P.C. and Zougmoré, R.B., 2016. Assessment of climate change policy and institutional context: The case of Ghana. *CCAFS Working Paper*.

[43] NDCs, https://www.unep.org/ndc/action-area/ghana

[44] MacInnis, J., Corbett, R. and Desmarais, A., 2022. The good, the bad, and the ugly of COP26: A conversation with two food sovereignty activists. *Canadian Food Studies/La Revue canadienne des études sur l'alimentation*, *9*(3), pp.4-16.

point.[45] To facilitate the implementation of Ghana's nationally defined contribution, the following policies have also been adopted:

Ghana has started the process of creating laws addressing climate change. Part 5 of the recently passed Environmental Protection Bill is specifically focused on climate change.[46] Following its introduction in Parliament and subsequent referral to the Committee on Environment, Science, and Technology (CEST) for examination, the National Energy Transition and Investment Plan was adopted in September 2023. In order to guide the energy system's orderly transition to a net zero by 2060, the Ministry of Transportation released the National Electric Vehicle Policy in December 2023. As a result of this program's implementation, the government removed import duties on electric vehicles for public transportation as well as the import of fully and partially disassembled vehicle parts for local assembly for a period of eight years. With assistance from Pathway 2050, Ghana initiated the preparation of a long-term low-emission development strategy by Article 4.19 of the Paris Agreement.[47] The modified Renewable Energy Act (Act 1045), 2020, instituted a net metering policy to encourage the integration of renewable energy sources into the national grid.

To support the NDC, Ghana adopted a national framework on the international carbon market and non-market approaches to guide the implementation of Article 6 of voluntary cooperation of the Paris Agreement. As a result, the Public Utilities Regulatory

Commission (PURC) adopted the "Rate Setting Guidelines for Net Metering of Renewable Energy Generation Systems Connected to Distribution Networks in Ghana."[48]

3.3 Ghana's Climate Change Legal Landscape

Under the Fourth Republic, Ghana has experimented with constitutional democracy for roughly thirty years. Its legal system is founded on the customary and common law of England.[49]

The period spanning the last two decades has witnessed the emergence of multiple policy, governance, and institutional frameworks in response to Ghana's climate change challenges. In a significant recent development, the government has drafted national legislation establishing the "Ghana Green Fund." This Fund pursues three principal aims: (i) resource mobilization for the implementation of environmental and climate policies; (ii) attraction of private sector finance; and (iii) enhancement of project planning capabilities. The Ghana Green Fund ought to be conceptualized as complementary to existing legislation in advancing climate governance objectives, rather than as a standalone statutory instrument.

Regulations and governance related to climate change in Ghana are mandated by particular institutions, which are essential for adhering to international norms in this area. In addition to the Ministry of Food and Agriculture (MoFA), other key players in managing and supervising climate governance include the Ministry of Water and Sanitation, the Ministry of Lands and Natural Resources, the Ministry of Finance (MoF), the Ministry of Local Government,

[45] Merrey, D.J., Loboguerrero Rodriguez, A.M. and Zeppenfeldt, L., 2023. An Enabling Innovation Ecosystem to Accelerate Agriculture Breakthroughs.

[46] UNFCCC, https://unfccc.int/sites/default/files/resource/gh_BUR4_UNFCCC_submission_02032024.pdf

[47] IDDRI, https://www.iddri.org/en/publications-and-events/policy-brief/long-term-low-emissions-development-strategies-and-paris

[48] Ghana's Fourth Biennial Update Report to the United Nations Framework Convention on Climate Change (2024), https://unfccc.int/sites/default/files/resource/gh_BUR4_UNFCCC_submission_02032024.pdf

[49] Francis Kofi Korankye-Sakyi, 'The Civil Justice Reform Debate: An African Perspective' in Elijah Tukwariba Yin and Nelson Kofie, (eds), Advancing Civil Justice Reform and Conflict Resolution in Africa and Asia: Comparative Analyses and Case Studies (IGI Global Publishers, New York 2021)

Decentralization and Rural Development (MLGDRD), the Forestry Commission (FC), the Energy Commission (EC), the Water Resource Commission (WRC), the Ghana Meteorological Agency (GMetA), the Ghana Health Service (GHS), the Soil Research and Water Research Institutes of the Council for Scientific and Industrial Research, and the World Health Organisation.

A survey of the literature can be used to identify several laws and regulations Ghana has regarding climate change, which are scattered over many legal documents. These legislative frameworks include, but are not limited to (i) The Renewable Energy Act, which authorises the efficient and ecologically responsible development, management, and utilisation of renewable energy sources for power and heat production;[50] (ii) The National Energy Commission was established by the Energy Commission Act 33. Its duties include overseeing the granting of licenses for these kinds of operations and transactions as well as managing, developing, and harnessing energy resources (such as hydropower, solar biomass, wind, geothermal, and hydrocarbons),[51] and (iii) The objectives and vision for effective mitigation, socioeconomic development, and adaptation are outlined in the 2013 National Climate Change Policy (NCCP). The goal is to "achieve sustainable development and equitable low-carbon economic growth for Ghana while ensuring a climate-resilient and climate-compatible economy."

While acknowledging that economic modernization will lead to increased emissions, it contends that by increasing public transportation, enhancing infrastructure, and reducing energy waste, the new growth path will lower emissions in comparison to the business-as-usual (BaU) baseline. In addition to low-carbon growth, the NCCP targets development routes that are climate resilient. In order to combat climate change, it promotes fusing ancient wisdom with new and developing findings.

It recommends setting up a facility dedicated to studying climate change, (iv) The National Climate Change Adaptation Strategy (2012) outlines strategies to increase disaster risk reduction's mainstreaming into national development frameworks, increase awareness, seize funding possibilities, and strengthen population resistance to climate change. (v) The 2010 Ghana Shared Growth and Development Agenda places a strong emphasis on the necessity of integrating the effects of climate change into development strategies.

The publication outlines Ghana's strategic priorities for addressing climate change adaptation. Central to these efforts is the National Energy Policy (2010), which seeks to create a "Energy Economy" capable of considerably increasing the country's export profits. Concurrently, the policy aims to provide the secure and consistent provision of high-quality energy services in all sectors, including urban and rural families, commercial enterprises, industries, and transportation. (vii) Ghana's Strategic National Energy Plan (SNEP) 2006–2020 (2016) outlines the energy requirements to achieve development goals and assesses the nation's energy supply system. Furthermore, Ghanaians must "protect and safeguard the environment" by chapter six of the 1992 Constitution, which is the country's ultimate law.[52] This is a constitutional clause that supports all other enabling legislation that emphasizes climate change in Ghana regarding regulation and enforcement. It falls under the directive principles of state policy.[53]

[50] Renewable Energy Act, 2011 (Act 832). https://energycom.gov.gh/files/RENEWABLE%20ENERGY%20ACT%202011%20(ACT%20832).pdf

[51] Energy Commission Act, 1997 (Act 541). https://energycom.gov.gh/files/energy-commissionact-1997.pdf

[52] The 1992 Constitution of the Republic of Ghana, art 41(k). https://lawsghana.com/constitution/Republic/constitution_content/46

[53] 1992 Constitution, chap 6. https://faolex.fao.org/docs/pdf/gha129754.pdf

Furthermore, the EPA Act (Act 490) of 1994 Ghana established the Environmental Protection Council (EPC) in 1974 as a public organisation tasked with environmental control. This law was passed by the 1974 National Redemption Council Decree (NRCD 239). Among other things, one of its duties was to make sure that all development initiatives, even those that already existed and were likely to interfere with environmental quality, were planned and carried out with appropriate protections in mind.[54] The legislative framework governing environmental protection in Ghana evolved through several instruments. Following amendments introduced by the Environmental Protection Council (Amendment) Decree, 1976 (SMCD 58), the original NRCD 239 was ultimately superseded by Act 490 in 1994. Section 1 of this Act formally created the Environmental Protection Agency (EPA) as the successor institution. The EPA, operating under the auspices of the Ministry of Environment, Science and Technology (MEST), assumes responsibility for planning climate change interventions and undertaking greenhouse gas inventories. Its National Climate Change Committee draws membership from government ministries, academic and research institutions, industry, and civil society. Additionally, a dedicated climate change unit within the Ministry of Finance provides coordinated support for EPA-related projects.

Among its responsibilities are the following: (i) the EPA advises the Environment Minister on the formulation of policies concerning all aspects of the environment, with an emphasis on environmental protection; (ii) the EPA sets standards and guidelines concerning the contamination of air, water, and land as well as other environmental pollution types, such as waste discharge and toxic substance control; and (iv) the EPA ensures that all established environmental impact assessment protocols are followed when planning and implementing development initiatives, including those about projects that are already in place.[55] For the effective implementation of Act 490 the Environmental Assessment Regulations,[56] were passed to give Act 490 a comprehensive legislative foundation for the Ghana Environmental Impact Assessment procedures. The regulations under this Act mandate that any development project that is expected to hurt the environment be subjected to an environmental evaluation. The purpose of L.I. 1652 is to guarantee that such development operations are carried out in a sustainable and environmentally sound manner.[57] Except difficulties it faces in monitoring and ensuring that its directions are followed, the EPA and its Regulation instrument have accomplished a great deal in terms of policy formation and implementation. Regulation of climate change benefits sustainability and the environment greatly. Certain academics firmly believe that adopting a more dynamic perspective towards policy and regulatory actions enables more funding for technologies that reduce pollution.[58] This assertion is exactly consistent with the Porter hypothesis, which proposed that climate policies could "trigger innovation that may more than fully offset the costs

[54] National Redemption Council Decree, 1974 (NRCD 239) s 2. https://archive.gazettes.africa/archive/gh/1974/gh-government-gazette-dated-1974-02-01-no-8.pdf

[55] Environmental Protection Agency (EPA) Act 490 1994, s 2. https://ir.parliament.gh/bitstream/handle/123456789/1819/ENVIRONMENTAL%20PROTECTION%20AGENCY%20ACT%2C%201994%20%28ACT%20490%29.pdf?sequence=1&isAllowed=y

[56] Environmental Assessment Regulations, 1999 (LI 1652) as amended by Environmental Assessment (Amendment) Regulations, 2001 (L.I. 1694) and Environmental Assessment (Amendment) Regulations, 2002 (L.I. 1703). https://www.brr.gov.gh/reg_details.php?id=MzQy

[57] Environmental Protection Agency, 'Environmental Impact Assessment Guidelines for the Health Sector' (Ghana Environmental Assessment Capacity Development Programme and Ghana Environmental Assessment Support Programme, 2010). https://www.eia.nl/documenten/00000059.docx

[58] Ibid. (n 25).

of complying with them".[59] Porter's theory only has an effect when cleaner technologies lead to increased output, reduced input prices, and innovative ideas that ultimately offset regulatory expenditures.[60]

4.0 Evaluation of Current Policy Measures Against Climate Challenges

To lessen the effects of climate change, Ghana has implemented several policies, some of which are focused on adaptation and others on mitigation. The adoption of regional and international treaties and agreements by the nation has also made it necessary for her to domesticate climate change policies as required by the amended convention. The key point that has to be addressed is how these national document-centred policies can be evaluated about the ongoing climate change issues that the nation is facing across all sectors.

By way of illustration, Ghana adhered to the 1972 Stockholm Declaration, an instrument widely acknowledged as the inaugural international endeavour to systematically address the environmental consequences of human activity. The Declaration constituted a global response to the urgent imperative of safeguarding and improving the environment for human habitation. Its significance lies in articulating overarching environmental policy objectives rather than imposing specific normative commitments enforceable against state parties. "A new era of global cooperation on environmental issues began with the 1972 United Nations Conference on the Human Environment in Stockholm," says Chasek. It paved the way for the concept of sustainable development and assisted in the establishment of the United Nations Environment Programme.[61] Ghana bears responsibility for a few accountability metrics and compliance requirements as a signatory. Stakeholders now have the courage to hold governments responsible for creating their normative framework in a way that advances the achievement of the declaration's goals and objectives. Based on this, Ghana has to follow the guidelines provided in that framework.

Again, after ratifying both in 1995 and 2003, Ghana fully adopted the UNFCCC and the Kyoto Protocol in 2003. Through these voluntary efforts, Ghana has pledged to uphold its obligations under the Convention and the Protocol.

Ghana is one of the parties to the Paris Accord.[62] The Paris Agreement establishes the objective of holding the increase in global average temperature to 1.5°C above pre-industrial levels. Ghana has, over successive years, actively pursued the translation of the Agreement's goals into national action. The country has entered a firm commitment to achieve a 15 percent reduction in greenhouse gas emissions by 2030. Consistent with Article 4 of the Paris Agreement, and in line with UNFCCC decisions 1/CP.21 and 4/CMA.1, Ghana has submitted its Nationally Determined Contribution for the implementation period 2020–2030, including subsequent revisions. This submission serves to reaffirm Ghana's 2015 nationally determined contribution, as provided for under paragraph 24 of UNFCCC decision 1/CP.21.

[59] Micheal Porter and & Claas Van der Linde, 'Toward a New Conception of the Environment–Competitiveness Relationship' (1995) 9(4) Journal of Economic Perspectives, 97.

[60] Ibid. (n 25).

[61] Chasek, P. 10.09.2020. "Stockholm and the birth of environmental diplomacy: Still Only One Earth: Lessons from 50 years of UN sustainable development policy". *IISD.* https://www.iisd.org/articles/stockholm-and-birth-environmental-diplomacy Accessed 22.02.2024.

[62] The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 1996 CoP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016 The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 1996 CoP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.

Ghana is committed to advancing Agenda 2063 and recognizes the geopolitical importance of Africa as a member of the Africa Union (AU). Therefore, the revised and enhanced nationally determined contribution considers articles 15, 16, 17, and 18 of the AU's agenda 2063 in addition to the goals of goal 1.[63]

Ghana has developed various national policies, including the Ghana Green Jobs Programme, the Green Ghana Project, the National Climate Change Master Plan Action Programmes for Implementation (2015-2020) (2016), the National Adaptation Strategy (2012), and the National Climate Change Policy (2013). The Accra Climate Action Plan, a comprehensive plan of action on climate change, outlines how the city will safeguard its systems and citizens from the effects of climate change that are already locked in due to historical emissions, as well as contribute to keeping the rise in global temperature to 1.5 degrees Celsius above average pre-industrial temperatures.[64] In Ghana, the threat of climate change and its associated difficulties appear unabated despite multiple treaty amendments and policy enactments. Why climate change and its problems endure despite enormous financial and technological investments is the question that has to be answered.

For instance, Ghana's temperatures have risen by roughly 1°C, or 0.21°C, per ten years, since the 1960s. The number of exceptionally hot days (Tmax >35°C) and hot nights (Tmin >26°C) has increased by more than 13% and 20%, respectively, annually; the biggest increases have been noted between September and November. Similar to the rest of West Africa, Ghana has had significant variations in precipitation throughout the years and decades.

However, from decade to decade, the total amount of rainfall throughout the 1960s dropped by 2.4%. While the north and south saw larger rainfall events, the country's middle region saw less rainfall, suggesting the possibility of extended dry spells. Climate change is expected to increase the likelihood and severity of drought and water scarcity across the country. The three main industries affected are human health, forestry, and water. Reduced crop yields and stress in cattle can also result from rising temperatures and increased aridity. This shows that rather than only joining a convention or developing national policy, a broader range of methods and actions should be used to address climate change.

5.0 Identifying Gaps in the Existing Framework.

Notwithstanding these actions, several holes in the legislative and policy frameworks remain to be found:

Enforcement and Implementation: The difficulty in enforcing and implementing current policies is one of the major gaps. Ghana has put in place extensive policies, but there is still more work to be done in turning these policies into results. This disparity is frequently linked to a lack of enforcement tools, restricted resources, and capacity.

Integration Across Sectors: It is evident that there is a deficiency in the integration of climate change plans among various economic sectors. Climate change is a multifaceted problem that has varying effects on different industries. Nevertheless, the current framework falls short of sufficiently guaranteeing the integration of climate change adaptation and mitigation strategies into all pertinent industries, including energy, urban planning, and agriculture.

[63] MESTI. (2021). Ghana: Updated Nationally Determined Contribution under the Paris Agreement (2020 – 2030) Environmental Protection Agency, Ministry of Environment, Science, Technology and Innovation, Accra. https://mesti.gov.gh/documents/ghanas-updated-nationally-determined-contribution-unfccc_2021/

[64] Accra Climate Action Plan. 2020. "First Five-Year Action Plan 2020–2025". https://www.ama.gov.gh/documents/Accra_Climate_Action_Plan.pdf

Information and Study: Another gap is the lack of trustworthy data and research to guide the creation and application of policies. Strong data are necessary for the creation of effective climate change policy; however, Ghana lacks localized climate change research and data. This restriction makes it more difficult to adapt policies to the unique requirements and vulnerabilities of the nation.

Engagement of Stakeholders: Local communities and stakeholders are not sufficiently involved in the development and execution of climate policies. Even with well-crafted national legislation, there can occasionally be a disconnect between the objectives of these policies and the pragmatic needs and priorities at the local level because local populations are frequently the ones most impacted by climate change.

Resources and finance: Having adequate resources is essential for the successful implementation of climate change policies. It would be extremely difficult for Ghana to secure enough funding to carry out its climate change goals. The global financial situation exacerbates this imbalance by increasing competition for funding climate change projects. While mitigation receives a lot of focus, strengthening adaptation strategies is still required.

The existing strategy is insufficient in addressing the need to increase resilience in the most vulnerable populations and in giving significant economic sectors more attention when it comes to enhancing their capacity for adaptation.

6.0 The Necessity of Climate Law for Ghana

The escalating impacts of climate change in Ghana underscore the imperative for a robust legal framework to direct climate action. By providing the structural foundation for coherent and coordinated mitigation and adaptation efforts, climate legislation ensures the sustainability and effectiveness of policy responses. The adoption of comprehensive climate legislation enables meaningful advancement through the establishment of clear protocols, cultivation of institutional backing, maintenance of accountability mechanisms, and facilitation of international collaboration. This section analyses the core components of Ghana's climate law and highlights its significance in realizing the nation's climate goals.

6.1 Framework for Climate Action

To handle climate change in Ghana methodically and cohesively, climate law is essential. Effective climate action requires a comprehensive national climate policy with well-defined goals, tactics, and roles. Adopting strong climate legislation that requires mandatory cuts in greenhouse gas emissions, encouraging the use of renewable energy sources, and enforcing sustainable land use practices are all part of this framework. Furthermore, it's critical to make sure that climate change is taken into account at every stage of planning and policymaking for every industry, from transportation and urban development to energy and agriculture.

6.2 Institutional Support and Governance

Adequate governance procedures and robust institutional support are needed for the successful implementation of climate regulations. It is essential to create new institutions or bolster current ones to organize and supervise climate action. These organizations ought to have the authority to oversee development, compel adherence, and offer financial and technical support for climate-related projects. Furthermore, creating creative funding sources to assist climate programs is essential. This could entail raising international climate money to support initiatives for climate resilience and sustainable development, as well as using carbon credits and green bonds.

6.3 Enforcement and Accountability

The effectiveness of climate regulations and the achievement of their intended outcomes depend upon the implementation of robust enforcement and accountability measures. A comprehensive

regulatory framework establishing clear standards, rules, and penalties for non-compliance—is essential. Such a framework should encompass critical sectors including deforestation prevention, renewable energy adoption, carbon emissions reduction, and other priority areas. Additionally, reliable mechanisms for transparent reporting and tracking of greenhouse gas emissions and climate action progress are imperative. Regular reporting facilitates performance monitoring, identifies implementation gaps, and supports continuous improvement in climate initiatives.

6.4 International Collaboration

Ghana's climate law ought to support global cooperation and be in line with international agreements. Ghana must make sure that its national climate policies are in line with the commitments made in the Paris Agreement to support international efforts to reduce global warming and increase climate resilience. It's crucial to work together regionally with neighbours to address transboundary climate challenges. Regional resilience and sustainability can be improved by cooperative efforts in fields including biodiversity protection, water resource management, and disaster risk reduction.

Ghana can create a strong foundation for climate change adaptation and mitigation by enacting a comprehensive climate law. The required institutional support, governance frameworks, and enforcement mechanisms will be provided by such laws to guarantee successful climate action. Ghana's position in the global battle against climate change will also be strengthened by adhering to international agreements and promoting regional collaboration, which will open the door for a resilient and sustainable future.

7.0 Case Studies of Some African Countries with Climate Laws and Their Benefits

Looking at other African nations that have passed comparable legislation can give Ghana important insights as it contemplates enacting climate laws to mitigate the negative effects of climate change. In this part, case studies of African countries that have passed comprehensive climate laws are examined, along with the advantages these measures have brought them.

When it comes to climate legislation and policy, South Africa is at the forefront of African nations. To address climate change, the nation passed the National Climate Change Response Policy in 2011 and the Climate Change Act in 2024. These laws establish a framework for mitigation and adaptation strategies.[65] The South African Climate Change Act has established a robust regulatory framework that mandates emission reduction, promotes the use of renewable energy sources, and integrates climate considerations into national and local planning. The country's reliance on coal for electricity has decreased as a result of the substantial growth of the renewable energy sector, particularly in wind and solar power, which has attracted investments and jobs. Additionally, by implementing adaptation strategies like water conservation and climate-smart agriculture, South Africa has improved its resistance to climate-related impacts like droughts and extreme weather events.

Kenya has also taken the initiative to combat climate change by establishing frameworks for laws and policies. The nation passed the Climate Change Act in 2016 to advance development that is climate resilient and enhancing capacity for adaptation in all spheres of the economy.[66]

The National Climate Change Council and the Climate Change Directorate were founded under the Climate Change Act to oversee the implementation of climate laws and coordinate climate

[65] South Africa Climate Change Act 22 of 2024, https://cer.org.za/virtual-library/legislation/national/air-quality-and-climate-change/climate-change-act-2024

[66] Kenya Climate Change Act, Revised Edition 2023. https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2023/TheClimateChange_Amendment_Act_No.9of2023.pdf.

action. Kenya has made great progress towards lowering greenhouse gas emissions and supplying dependable, clean energy to underserved areas through the promotion of renewable energy, particularly geothermal, wind, and solar power. Kenya's legal structure has additionally made it possible for the government to draw in foreign funding for climate change, which has aided in the execution of mitigation and adaptation initiatives and improved Kenya's capacity to mitigate climate vulnerability and foster resilience.

Also, Benin passed its climate change legislation to offer a methodical strategy for combating climate change. The law contains clauses promoting sustainable land use practices, renewable energy development, and emissions reduction.[67] The creation of a regulatory framework that encourages climate action at the municipal and national levels has been made easier by Benin's climate law. Progress has been made in the nation's renewable energy initiatives, especially in the area of solar energy, which has increased energy access and decreased emissions. The law has also made it easier for Benin to get foreign money for climate projects, which helps with adaptation and mitigation efforts alike.

Furthermore, the National Climate Change Act of Nigeria, which was passed in 2021, creates a legislative framework for tackling climate change using coordinated actions across all sectors.[68] The National Council on Climate Change was established by the National Climate Change Act and is in charge of carrying out climate policy and guaranteeing compliance. Increased investment in renewable energy projects, especially in wind and solar energy, has helped Nigeria diversify its energy mix and lessen its reliance on fossil fuels. Additionally, the Act encourages the conservation of forests and sustainable land use, which lowers emissions and increases resistance to the effects of climate change.

Enacted in 2021, Uganda's Climate Change Act seeks to guarantee climate-resilient development and improve adaptation capability across sectors.[69] A framework for incorporating climate factors into local and national development planning has been provided under Uganda's climate law. Initiatives for renewable energy, especially those involving solar and hydropower, are encouraged by law since they have increased energy access and decreased greenhouse gas emissions. Better coordination and execution of climate policies are now possible thanks to the law's increased institutional capacity for climate action.

Lastly, to address both the adaptation and mitigation of climate change, Mauritius has passed extensive climate legislation.[70] Mauritius' climate law has led to significant advancements in renewable energy, particularly in wind and solar power, which have reduced the country's reliance on imported fossil fuels. The law has also promoted sustainable development practices, enhancing the resilience of infrastructure and communities to climate impacts. Furthermore, Mauritius has been able to secure international climate finance to support its climate action plans, facilitating the implementation of various mitigation and adaptation projects.

The implementation of comprehensive climate laws has been shown to yield enormous benefits, as evidenced by the experiences of South Africa, Kenya, Benin, Nigeria, Uganda, and Mauritius. Regulations, economic diversification, climatic resilience, and sustainable development have all

[67] Benin Climate Law, Law No. 2018-18, http://adaptation-undp.org/benin-adopts-national-legislation-climate-change.

[68] Nigeria Climate Change Act, 2021, https://climate-laws.org/document/nigeria-s-climate-change-act_5ef7

[69] The Uganda National Climate Change Act, 2021, https://www.preventionweb.net/publication/uganda-national-climate-change-act-2021#:~:text=This%20Act%2C%20organized%20in%207,measures%3B%20to%20provide%20for%20the

[70] Mauritius Climate Change Act 2020 (no 11/2020), https://mauritiuslii.org/akn/mu/act/2020/11/eng@2020-11-28/source.pdf.

improved in these countries. These case studies can help Ghana create and execute climate legislation that takes advantage of its prospects for a sustainable future while addressing its particular set of difficulties. Ghana may achieve long-term resilience and prosperity by strengthening its climate action efforts and implementing a comprehensive legal framework and diverse approach.

8.0 Policy Recommendations for Using Multifaceted Approaches in Curbing Climate Change in Ghana and the Necessity of Climate Law for Ghana

The mitigation and adaptation of climate change in Ghana necessitates a multimodal approach that includes the development of renewable energy, sustainable agriculture, effective water resource management, forest conservation, and increased public awareness. To guarantee that these efforts are coordinated, sustained, and legally enforceable, strong climate laws must be put in place. The following policy recommendations highlight how Ghana can utilize multimodal approaches to combat climate change and highlight the importance of comprehensive climate legislation.

8.1 Renewable Energy Development

Ghana should place a high priority on developing its renewable energy resources in order to lessen its reliance on fossil fuels and its emissions of greenhouse gases. This entails offering financial incentives for hydropower, wind, and solar energy installations. Investment from the private sector will be drawn in by the establishment of a clear legislative framework that supports the growth of renewable energy sources and includes tax breaks, subsidies, and expedited permitting procedures. Furthermore, it is imperative to incorporate targets for renewable energy into national energy policies and guarantee that the system can receive inputs of renewable energy.

8.2 Sustainable Agriculture Practices

Encouraging sustainable agricultural methods is essential to improving climate change resilience and food security. Ghana should employ climate-smart farming practices, like agroforestry, drought-tolerant crops, and effective irrigation infrastructure. By offering farmers training, financial support, and climate information services, they can adopt sustainable methods that will increase agricultural productivity and decrease their susceptibility to the effects of climate change. Policies should also support organic farming in order to reduce the use of chemical pesticides and fertilisers, which increase greenhouse gas emissions.

8.3 Forest Conservation and Reforestation

Reforestation and forest conservation are essential parts of Ghana's climate plan. Laws that safeguard current forests and encourage replanting will aid in soil erosion prevention, carbon sequestration, and biodiversity preservation. Through community forestry initiatives, local communities can be involved in forest management, ensuring sustainable forest use and improving livelihoods. Policies that offer financial and technical support to local governments and communities should be in favour of national tree-planting campaigns.

8.4 Water Resource Management

Developing rainwater harvesting systems and improving irrigation infrastructure can provide supplementary water sources and reduce pressure on freshwater resources. Restoring and protecting wetlands will enhance water storage capacity, improve water quality, and provide habitat for wildlife. Resilience to the impacts of climate change requires effective management of water resources, which Ghana should implement policies that promote.

8.5 Public Awareness and Education

Promoting a culture of sustainability and proactive climate action requires educating the public and communities about climate change. Incorporating climate change education into school curricula will make sure that the next generation is aware of and involved in the issue. Community outreach initiatives and the use of media platforms to share information about adaptation tactics and the effects of climate change will reach a larger audience. Policies should encourage the creation and execution of public awareness campaigns and educational initiatives.

8.6 The Necessity of Climate Law

The creation of dedicated climate institutions, exemplified by a National Climate Change Authority, would facilitate effective coordination and oversight of climate interventions. Simply stated, the enactment of robust climate legislation is imperative to establish the legal architecture necessary for coherent and sustained climate action. Ghana would be well-advised to develop a comprehensive Climate Change Act delineating clear objectives, measurable targets, and well-defined responsibilities for climate change mitigation and adaptation. Such legislation ought to incorporate legally enforceable emissions reduction targets, provisions advancing renewable energy deployment, and measures promoting sustainable land management and forest conservation.

Additionally, the proposed Climate Change Act should mandate systems for tracking, reporting, and validating progress on climate initiatives and greenhouse gas emissions. Embedded accountability and transparency mechanisms would ensure regulatory compliance and drive continuous improvement. The Act ought further to mainstream adaptation and mitigation strategies together with climate considerations into sectoral and national development planning, thereby mandating climate impact assessments for all projects and programs. Securing adequate financing for climate initiatives represents another indispensable element. The legislation should facilitate access to international climate finance while establishing innovative funding mechanisms, including carbon credits and green bonds. Equally important would be provisions encouraging private-sector investment through risk-sharing instruments, tax incentives, and public-private partnerships.

9.0 Conclusion

Climate change poses a massive and complex challenge to Ghana's economy, affecting numerous sectors such as infrastructure, agriculture, health, and water resources. Because of the gravity of these consequences, all sectors and stakeholders from the government and corporate sector to local communities and foreign partners must collaborate in a coordinated manner. Ghana contributes very little to global greenhouse gas emissions, yet the negative consequences of climate change disproportionately affect the country. Because these effects exacerbate pre-existing issues such as hunger, poverty, and unstable economies, Ghana must develop and implement effective climate change mitigation and adaptation strategies.

This paper emphasises how urgently Ghana needs comprehensive climate legislation to direct its adaptation and mitigation initiatives. Ensuring that these efforts are in line with national priorities and international obligations, like the Paris Agreement, requires clear guidance and coordination among various sectors and stakeholders, which is made possible by the importance of such legislation. Additionally, it will help carry out Ghana's Nationally Determined Contributions (NDCs), which include several programs and 19 policy measures targeted at lowering greenhouse gas emissions, enhancing air quality, and generating green jobs. Enacting extensive climate legislation will guarantee that the nation fulfils its goals and increases its ability to withstand the effects of climate change. It is also essential that Ghana actively participates in international climate alliances and negotiations. Climate law can promote international collaboration, giving

Ghana access to the financial, technological, and technical know-how needed to carry out its climate action goals.

The study's methodical methodology demonstrates the importance of inclusive methods and cross-sectoral collaboration. By incorporating climate change considerations into national development planning, Ghana can launch a comprehensive response that addresses both mitigation and adaptation imperatives. The implementation of strong climate legislation—designed to support Ghana's Nationally Determined Contributions (NDCs) and accompanying policy frameworks—is a critical first step in the country's climate response. Legislation that incorporates adaptation and mitigation measures into national development plans would strengthen the country's long-term resilience and sustainability. This integrated approach, which focuses on agriculture, risk reduction, environmental stewardship, sustainable energy, transportation, and infrastructure, offers Ghana a feasible path for negotiating the complex issues of climate change. Through international collaboration and strategic partnerships, Ghana can cultivate a more resilient and sustainable future for its population.