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Forging a Pan-Regional Front: The Case for a Caribbean-African Alliance to Achieve Climate Justice Through Innovative Finance

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Abstract

Climate change is a global crisis that disproportionately affects vulnerable regions such as the Caribbean and Africa, which contribute minimally to greenhouse gas (GHG) emissions yet endure significant climate related damages. This study examines the structural inequalities driving these disparities and advances a climate justice framework cantered on reparations through innovative finance mechanisms, including the proposed Global Climate Reparations Fund (GCRF). It highlights the scientific consensus on anthropogenic climate change and the severe consequences for affected regions, including rising sea levels, intensified hurricanes, and prolonged droughts. Strategies for mobilizing resources for mitigation, adaptation, and compensation are analyzed through the lens of international legal principles and climate finance policies. The study underscores the importance of fair distribution of climate finance to address both historical emissions and current vulnerabilities. Its further advocates for enhanced international cooperation and the creation of a Caribbean-African Alliance to strengthen advocacy for climate justice, while offering recommendations to reinforce climate finance mechanisms that support sustainable development and long-term resilience.

Introduction

Climate change presents a complex global challenge marked by significant disparities in its causes, impacts, and responses. While industrialised nations have historically driven greenhouse gas emissions, vulnerable regions like the Caribbean and Africa endure the most of climate induced environmental degradation despite minimally contributing to global emissions. The study addresses the urgent need to rectify these imbalances through climate reparations, advocating for a just and fair climate finance mechanism.

The core problem highlighted is the disproportionate impact of climate change on these developing regions. Caribbean Small Island Developing States (SIDS) face existential threats from rising sea levels and increasingly severe hurricanes, while African nations contend with prolonged droughts, erratic rainfall, and compromised food security. These environmental stressors translate into economic and social challenges, including reduced agricultural productivity, increased migration, and mounting public debt to finance climate adaptation efforts.

The author names the critical gap in international climate finance as a major obstacle to addressing these challenges. Existing mechanisms fall short in delivering prompt and adequate support to the most affected nations, perpetuating systemic inequalities. High-emission countries, having historically received help from fossil-fuel-driven industrialisation, have yet to fully acknowledge and assume their responsibility for these damages. This study calls for innovative climate finance mechanisms, such as the proposed GCRF, to provide sustained financial support for mitigation, adaptation, and compensation.

Research Methodology

The research method for this study adopts a multidisciplinary approach that integrates legal, scientific, and policy-based perspectives to examine the issue of climate reparations. It relies on qualitative research, drawing upon primary and secondary sources to comprehensively understand the subject matter. A thorough literature review was conducted to contextualise the historical emissions patterns, current impacts, and proposed reparative measures. This involved examining scholarly articles, books, and reports from reputable organisations such as the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC). By engaging with a wide array of sources, the research sets up a solid foundation to understand the complexities surrounding climate change and the necessity for climate reparations.

Comparative analysis was employed to investigate the specific vulnerabilities and climate-related challenges experienced by the Caribbean and Africa. These findings contrasted with high-emission nations' responsibilities and actions, revealing disparities in climate impacts and financial support. This comparative framework helps illustrate the disproportionate burden faced by these regions despite their minimal contributions to global emissions.

The study also utilises case studies to provide empirical evidence of the real-world consequences of climate change in both the Caribbean and Africa. These case studies underscore the tangible effects of climate change, such as loss and damage to infrastructure, economic disruption, and societal challenges, thereby substantiating the need for climate reparations.

Quantitative data were incorporated to assess climate change's economic, social, and environmental impacts on these vulnerable regions. National climate reports, international databases, and peer-reviewed studies offered statistical insights into mitigation, adaptation, and loss compensation costs. This data-driven approach ensures that the arguments presented are grounded in empirical evidence.

This methodological approach provides a well-rounded and evidence-based analysis of climate justice and the critical need for reparations in the Caribbean and Africa. By integrating diverse sources of information and applying multiple analytical lenses, the author aims to present a compelling case for the necessity and feasibility of climate reparations.

Climate Change Due to Greenhouse Gas Emissions

Climate change refers to significant and lasting changes in the average weather patterns that define Earth's local, regional, and global climates. These changes have substantial impacts on ecosystems, human health, and economies. The primary driver of contemporary climate change is increased GHGs emissions in the atmosphere due to human activities. Climate change

encompasses both global warming driven by human-induced emissions of GHGs and the resulting large-scale shifts in weather patterns. While climate has varied throughout Earth's history due to natural processes such as volcanic eruptions, solar variations, and ocean currents, the current phase of climate change is primarily attributed to anthropogenic factors. According to IPCC, (2021) the past century has seen unprecedented temperature increases, with the last few decades marking the warmest period in modern civilization.

The primary driver of modern climate change is the increased concentration of GHGs in the atmosphere. These gases, including carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), trap heat from the sun and create a warming effect known as the greenhouse effect. Human activities have significantly amplified this natural process.

Coal, oil, and natural gas combustion for energy and transportation is the largest source of CO2 emissions. The Industrial Revolution marked the beginning of large-scale fossil fuel use, and it has only intensified since then. The energy sector alone accounts for about 75% of global GHG emissions (IEA, 2020, pp.15-20). Forests function as carbon sinks, absorbing CO2 from the atmosphere. Deforestation for agriculture, logging, and urban development reduces the number of trees available to absorb CO2, thus increasing the amount of carbon in the atmosphere. According to the Food and Agriculture Organization, approximately ten million hectares of forest were lost annually from 2015 to 2020 (FAO, 2020, pp.15-20).

The Debate on Warming

Most climate scientists agree that global warming is occurring and is primarily driven by human activities. According to the IPCC, (2021) the evidence for human induced global warming is unequivocal, with numerous studies showing a strong correlation between GHG emissions and rising global temperatures. The IPCC’s assessment reports synthesize peer-reviewed research from around the world, providing a comprehensive overview of the current state of climate science. However, a minority of scientists and commentators argue that the evidence for human-induced global warming is not conclusive. These sceptics often point to historical climate variability, suggesting that current changes could be part of natural cycles. They also highlight uncertainties in climate models and potential biases in data collection. For instance, Lindzen and Choi (2009, pp.4-6) argue that climate models overestimate the climate's sensitivity to CO2 levels, potentially leading to exaggerated predictions of future warming.

The debate over global warming extends beyond scientific discussions to economic and political realms. Proponents of aggressive climate action argue that the long-term benefits of mitigating global warming outweigh the short-term economic costs. They emphasise the potential for job creation in renewable energy sectors, the health benefits of reducing air pollution, and the necessity of avoiding the catastrophic impacts of unchecked climate change. Nicholas Stern estimated that the costs of inaction could be significantly higher than mitigation costs, urging immediate and sustained global efforts to reduce emissions (Stern, 2007, pp. xv-xx).

Conversely, opponents often contend that stringent climate policies could harm economic growth, particularly in developing countries that rely on fossil fuels for energy and industrialisation. They argue that such policies could lead to higher energy prices, job losses in traditional energy sectors, and reduced competitiveness. Roger Pielke (2010, pp. 217–225) highlights the challenge of balancing economic development and environmental sustainability, suggesting that innovation and adaptation are crucial components of effective climate policy. Critics of aggressive climate policies argue that these measures could worsen social inequalities by disproportionately affecting low-income households and communities.

The Caribbean Vulnerability

Small Island Developing States (SIDS) in the Caribbean face existential threats from rising sea levels, more powerful hurricanes, and unpredictable weather patterns. The geography of these islands makes them particularly susceptible to coastal erosion and flooding, which can devastate communities and economies. For instance, Hurricane Maria, which struck Dominica in 2017, caused widespread destruction, leaving the island's infrastructure in ruins and its economy in tatters. Meade reported that:

> "Data compiled by Weather Underground shows that in only twelve hours Hurricane Maria strengthened from a Category 2 hurricane to a Category 5. When the storm made landfall in Dominica, on Monday, it unleashed a-hundred-and-seventy-five-mile-per-hour winds on the island of seventy thousand people" (Meade, 2017).

The Caribbean has already been placed on the frontline in the struggle against the consequences of climate change. Storms are projected to increase in intensity and regularity as oceans warm up. As BBC Weather's Tomasz Schafernaker (2019) said after hurricane Dorian, scientists are uncertain whether climate change is causing more hurricanes to form, but rising global temperatures are making the hurricanes that do occur stronger and more damaging. The Caribbean is one of the world's most vulnerable regions to climate change. Its large coastal populations and exposed location leave it at the mercy of rising sea levels, stronger storms, and worsening drought. Increasing temperatures, meanwhile, threaten its unique biodiversity. Despite their meagre contributions to global GHG emissions, the Caribbean's thirteen sovereign nations are already enduring the most of these climate disruptions, putting these tourism-dependent countries deeply in debt and spurring increased migration across the region (Roy, 2023).

In 2019, it was the turn of the Bahamas to provide a quick echo of the plight of Dominica in the form of Hurricane Dorian. Dorian hit the Abaco Islands of the Bahamas as a category 5 storm with 185 mph winds, tying it for the strongest landfall of any storm on record. Indeed, Dorian tied for being the second-strongest hurricane (in terms of wind speed) ever recorded in the Atlantic. What distinguished Dorian was how it stalled over the Bahamas and refused to leave until all had been destroyed in its path. An increase in sea surface temperatures strengthens the wind speeds within storms and raises the amount of precipitation a hurricane will dump. Two years later, Hubert Minnis, the Prime Minister of Bahamas at the United Nations General Assembly (UN, General Assembly, 2019) spoke similarly to Skerrit. "*Small island countries … around the world, are on the frontlines of being swallowed into an abyss, created initially by human activity and increasingly by inaction*." In July 2024, it was the turn of the Grenadines to feel the havoc wreaked by Hurricane Beryl.

> "Beryl intensified from a Category 1 to a Category 4 hurricane in just 48 hours, the fastest recorded intensification before September, the peak of the Atlantic hurricane season". According to Prime Minister of Grenada, Dickson Mitchell, "We are no longer prepared to accept that it is OK for us to constantly suffer significant clear, demonstrated loss and damage arising from climatic events and be expected to borrow to rebuild year after year while the countries that are responsible for creating (and) exacerbating the situation sit idly with platitudes and tokenism" (The New Today, 2024).

Vulnerability of Africa

Africa now fully recognizes that climate change is no longer a distant threat but a present reality. Without decisive action, the years ahead will bring intense climate-related strain on the continent's economies, livelihoods, and ecosystems, notes Ambassador Josefa Leonel Correia

Sacko, Commissioner for Agriculture, Rural Development, Blue Economy, and Sustainable Environment at the African Union Commission. Because Africa is highly exposed, structurally fragile, and has limited adaptive capacity, the continent is expected to experience the consequences of climate change with greater intensity. This vulnerability places public health, peace, prosperity, infrastructure, and economic sectors at serious risk. (World Meteorological Organization [WMO], 2023).

More than 110 million people on the continent were directly affected by weather, climate, and water-related hazards in 2022, causing more than $8.5 billion in economic damages. According to the Emergency Event Database, 5,000 fatalities were reported, of which 48% were associated with drought and 43% with flooding. However, the true toll is likely to be much higher because of under-reporting As Petteri Taalas said: "*Heatwaves, heavy rains, floods, tropical cyclones, and prolonged droughts are having devastating impacts on communities and economies, with increasing numbers of people at risk*." (WMO, 2023).

Contribution of Caribbean and Africa to Greenhouse Gas Emissions

As SIDS, Caribbean countries contribute only one per cent of global GHG emissions. Although these countries contribute little to climate change, they experience much greater negative effects, including higher sea levels, more frequent and severe hurricanes, and damage to coral reefs. The United Nations Development Programme (UNDP, 2022) highlights the urgency of building resilient futures in the Caribbean, focusing on sustainable development and climate adaptation strategies to safeguard these vulnerable nations from the growing threats posed by climate change.

Similarly, Africa manages less than ten percent of global GHG emissions, yet it is the continent least equipped to cope with the negative impacts of climate change. The State of the Climate in Africa 2022 report outlines African nations' severe challenges, including prolonged droughts, erratic rainfall patterns, and extreme weather events that threaten food security, water resources, and livelihoods. The report emphasises the urgent need for robust climate adaptation measures and international support to enhance Africa's resilience and capacity to mitigate the detrimental effects of a changing climate (WMO, 2023, Preface).

Impact of Climate Change on the Gross Domestic Product (GDP) of the Caribbean and Africa

A 2020 study found that climate change damages in the Caribbean are projected to increase from 5% of GDP in 2025 to more than 20% by 2100 if no regional action is taken to mitigate or adapt to climate change (Thomas et al., 2020, p. 8).

In both warming scenarios, African countries are projected to experience detrimental economic consequences from climate change by mid-century. Under a high-warming scenario, Eastern and Western Africa would experience a reduction in GDP per capita by about fifteen per cent by 2050 (below a baseline GDP scenario). Northern and Southern Africa would experience a decrease in GDP per capita, approaching 10% by 2050. Central Africa could be less affected, with a decrease of 5% in the high-warming scenario. After the 2030s, the loss gap between the low and high-warming scenarios widens substantially. By 2050, losses in the high-warming scenarios range from 5% higher for Central Africa to around 8% higher for Western African regions. A limited number of African countries, including Liberia, Sudan, and the United Republic of Tanzania, display the highest economic vulnerability to future climate change in both warming scenarios. This high economic risk results from both high historical vulnerability

and rapidly changing temperature and precipitation patterns (African Development Bank Group [ADBG], 2020, p.12).

Climate Justice: What is it?

Climate justice is a term, and more than that, a movement that acknowledges climate change can have differing social, economic, public health, and other adverse impacts on underprivileged populations. Advocates for climate justice are striving to address these inequities head-on through long-term mitigation and adaptation strategies. Climate justice is a framework that integrates human rights and social equity with climate change policy and action. It emphasises the disproportionate impact of climate change on vulnerable populations and seeks to address the systemic inequalities that worsen these effects (Simmons, 2020).

Climate justice recognises climate change is an environmental issue and a profound social and ethical challenge. The concept highlights that those who have contributed the least to GHG emissions, often marginalised communities and developing countries, are disproportionately affected by its impacts. These include increased exposure to extreme weather events, rising sea levels, and adverse health outcomes (Schroeder & Lovell, 2012, pp.23-37).

At the heart of climate justice is the principle of equity. It asserts that the burden of addressing climate change should not fall disproportionately on the most vulnerable populations. This principle is enshrined in international agreements such as the Paris Agreement, emphasising "*common but differentiated responsibilities*" (United Nations Framework Convention on Climate Change, 2016, p. 4). This framework acknowledges that while all countries have a role in combating climate change, those with greater historical contributions to GHG emissions and greater capacities to act should take on a larger responsibility.

Climate justice also incorporates an intersectional approach, recognizing social inequalities such as race, gender, and economic status, which affect individuals' vulnerability to climate impacts. For instance, women in developing countries often face more significant risks due to climate-related disruptions because they have less access to resources and decision-making power (Mary Robinson Foundation of Climate Justice, 2022). Addressing these intersecting forms of inequality is essential for effective climate action.

Addressing climate justice is critical for several reasons. First, it ensures that climate policies are fair and do not worsen existing social and economic disparities. For example, implementing carbon pricing mechanisms, such as carbon taxes, should be designed to protect low-income households from disproportionate economic impacts (Nordhaus, 2013). Second, incorporating climate justice principles can enhance the effectiveness of climate policies by building broader support and fostering cooperation among diverse stakeholders. The involvement of marginalized communities in decision-making processes can lead to more inclusive and innovative solutions to climate challenges (Office of the United Nations High Commissioner for Human Rights, 2015). Third, climate justice underscores the need for global solidarity. Despite their minimal contribution to global emissions, developing countries often face severe climate impacts. International support for adaptation and resilience-building in these nations is crucial for achieving global climate goals and ensuring all countries can cope with climate change effects (UNDP, 2023).

Climate justice provides a critical lens through which to view and address the impacts of climate change. Emphasising equity, intergenerational responsibility, and intersectionality ensures that climate action is fair and effective. Integrating climate justice principles into climate policies and international agreements is essential for creating a more fair and resilient global community. As

climate change continues to pose significant challenges, prioritising climate justice will be vital to achieving sustainable and inclusive solutions.

Climate change litigation has two broad categories: public law actions against governments and public authorities, raising human rights, constitutional and administrative law arguments, and private law actions based primarily on tort law. The total number of climate change cases has more than doubled since the first report on the issue, from 884 in 2017 to 2,180 in 2022 (UNEP, 2023).

Mitigation

Mitigation in the context of climate change refers to actions aimed at reducing or preventing GHG emissions and enhancing natural systems' capacity to absorb these gases, thereby limiting the extent of global warming. Effective mitigation strategies are essential for slowing down or reversing the adverse impacts of climate change, and they encompass a wide range of policies, technologies, and practices designed to address the root causes of climate change. Most climate justice cases have challenged government decisions based on a project's inconsistency with the goals of the Paris Agreement or a country's net-zero commitments.

Adaptation

Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects. It refers to changes in processes, practices and structures to moderate potential damages or benefit from climate change opportunities. In simple terms, countries and communities must develop adaptation solutions and implement actions to respond to current and future climate change impacts.

Adaptation actions can take many forms, depending on the unique context of a community, business, organisation, country, or region. There is no 'one-size-fits-all-solution' as adaptation can range from building flood defences, setting up early warning systems for cyclones, switching to drought-resistant crops, to redesigning communication systems, business operations, and government policies. Nations and communities are already taking steps to build resilient societies and economies. However, greater action and ambition will be needed to manage the risks cost-effectively, both now and in the future.

Compensation

Climate change is already threatening the human rights of millions of people worldwide. One direct consequence of climate change is the rise of the sea level. Climate justice litigation is also compensatory in nature against contributors to climate change.

Impediments to Initiating Legal Challenges for Climate Justice in the Caribbean and Africa

Poverty

Two primary goals of modern society and sustainable development are poverty eradication and equity. As such, these principles have been consistently mentioned in international instruments in social, economic, and environmental law fields. The principles of equity and the eradication of poverty find their basis in the United Nations (1945, Art. 55) where the UN promotes higher standards of living, full employment, conditions of economic and social progress and development, and respect for human rights, inter alia. Within a nation state, aspirations of poverty alleviation are critical. The relationship between poverty and the environment was made clear during the first attempt at articulating an international policy on environmental protection.

In 1972, world leaders gathered in Stockholm for the UN Conference on the Human Environment (UNCHE), the first major international conference on the environment. This conference saw the expression of concerns by developing countries on the problem of poverty and its impact on efforts to ensure that the human environment was kept at acceptable levels. The Government of India's (1972) national report presented at the Stockholm conference said:

"The world's ills involve the three P's — pollution, population, and poverty" (United Nations, 1972). A similar theme was echoed in the Indian report, which asserted that "on account partly of dire poverty of the masses, the lack of education, the extreme preoccupation with the urgent demands of sheer existence, there is often an apathy, a general lack of popular concern about the quality of the environment in India."

Today, the issue of poverty is still as strong as in 1972 when the international community met for the first time to discuss it. In 1992 during the Earth Summit held in Rio de Janeiro, the second major international conference on the environment organized 20 years after UNCHE, poverty and development once again were the central themes. In Agenda 21, Chapter 3 "Combating Poverty" said:

"It is also recognized that … the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty" (United Nations, 1992)

Concerns with poverty and the interlocking issue of development and their impact on the environment have been recurring themes from 1972 onwards in the speeches of national leaders on environmental protection. There is the oft-quoted remark by the late Indian Prime Minister, Indira Gandhi, that "*poverty is the greatest pollutant in the case of the developing world" (*Hazarika,1987, p. 17). Even leaders whose governance contributed to widespread poverty have drawn connections between poverty and environmental degradation. Echoing the earlier words of Indira Gandhi, Zimbabwean President Robert Mugabe saw that:

"Preventable poverty is one of the major causes of environmental degradation today. Poverty pollutes our environment. Those who are poor and hungry will often destroy their immediate environment to survive. Their livestock will overgraze the grasslands and in growing numbers will crowd congested cities. They will overuse marginal lands. This explains why the greatest environmental change is occurring in developing countries. These countries are poor" *(*Mugabe,1991).

A look at income distribution among members of the global community reveals a starkly inequitable pattern. In 2021, data from the *World Inequality Database* showed that in Africa the top 10% of the population controlled about 54% of national income, while the bottom 50% received only 6–8% (World Inequality Database, 2021).

Latin America and the Caribbean at the crossroads is an unprecedented examination of the root causes of the region's persistent underperformance in the distribution of income, well-being, and opportunities. It considers not only the traditional measures of income but also less tangible issues such as geography and trust in institutions. It provides policy recommendations to bridge those gaps and appear from the pandemic on a stronger foundation to generate more inclusive growth. As Eric Parrado said:

"Inequality in Latin America and the Caribbean is well-known but not necessarily well understood…We look at how the social contract is fractured on many levels. The poor are more vulnerable to climate change" (Inter-American Development Bank, 2020).

Conflict between Intergenerational and Intragenerational Equity

The conflict between intergenerational and intragenerational equity centres around the allocation of resources and opportunities both across different generations and within a single generation. Intergenerational equity refers to fairness in the distribution of resources and opportunities between different generations. It emphasizes the responsibility of the current generation to use resources in a way that does not compromise the ability of future generations to meet their own needs. Intragenerational equity focuses on fairness within the current generation, addressing disparities in resource distribution, opportunities, and wellbeing among individuals and groups living at the same time. Some consider that prioritising resource conservation for future generations might limit the availability of these resources for current use, potentially worsening existing inequalities within the current generation. By addressing immediate needs and reducing current disparities might lead to overuse or depletion of resources, leaving future generations with fewer resources. The conflict between intergenerational and intragenerational equity requires a delicate balance. Effective governance, ethical considerations, and innovative solutions are necessary to ensure that the needs of both current and future generations are met, fostering a just and sustainable society. A good example is the case of *Peter K. Waweru v. Republic* (Kenya High Court, 2006), the Court affirmed that protecting the environment is essential for both current and future generations.

Mitigation versus Development

Guyana and Namibia are good examples of facing tension between climate change mitigation (reducing emissions) and development (economic growth, poverty reduction, social needs). United Nations Development Programme (2024) reports that 1.8% of Guyana's population is defined as multidimensionally poor, while an additional 6.5% is vulnerable to multidimensional poverty. This boom in economic activity has vastly different the quality of life for the citizens since the discovery of oil and offshore gas discovery. Guyana presents a promising development that is projected to transform the economy. The government is ambitious and plans to inculcate capital spending to address high-priority social initiatives, including power plant construction and transform offshore gas into commercial energy to address developmental needs, and improve competitiveness by increasing electricity supply, enhancing the reliability of the power grid, and lowering energy costs; build a highway to Brazil, two bridges to Suriname and over the Demerara river, rehabilitate the road and railway network to increase trade connections; build agro processing units, and establish a regional food hub, to diversity the non-oil economy; build schools and six regional hospitals to develop human capital; and improve watershed management, flood risk management, and build five water treatment plants to increase resilience to flooding (International Monetary Fund, 2023).

The initiatives the government plans to implement will undoubtedly improve the quality of life of citizens and social institutions. However, there are risks to bear; Guyana remains volatile to climate change because 90% of the population lives within 10 km of that coast that lies at 1.4 metres below mean high tide level of the Atlantic Ocean additionally around 85% of Guyana's landscape is covered by dense rainforests (Caribbean Regional Climate Centre, n.d.).

By 2028, four new oil fields will be approved, which will lead to the collective production of 1 million barrels per day. Hence, the gross national income will continue to increase, having $5.87 by 2028 with a steady growth rate of 2.8%. Moreover, Guyana’s current account will continue to have a surplus rather than a deficit and will be able to keep this surplus due to oil exports. Guyana will inherently receive help from oil exportation and continue to increase the nation's economic status and the citizens' social status (Oil Now, 2023).

Interestingly, the first constitutional case on the right to a healthy environment in the Caribbean region has profound implications for the battle between mitigation and development. The issue has been squarely put in the courtroom in Thomas & De Freitas v Attorney-General of Guyana (*Thomas & De Freitas v. Attorney-General of Guyana*, 2021). Oil and gas development in Guyana has emotionally been touted as a carbon bomb. This case has been considered as unusual as Guyana, through its vast forested areas, is touted as a carbon sink. The feeling is that all of this will change with oil and gas development. Climate change advocates from the developed world were quick to ascribe to Guyana the status of climate leader and a model for the rest of the world to follow. This view, while flattering, totally ignored the social and economic reality of Guyana:

> "*This case gives voice to growing public concern in Guyana about the impacts that oil production is already having, through ongoing gas flaring and outsized influence on politics, and the threats that it poses to Guyana's marine environment, neighbouring Caribbean countries, and the global climate," adds Reisch. "Guyana's courts have an opportunity to ensure that ExxonMobil's relentless pursuit of the last drop of oil doesn't come at the expense of human rights, the environment, and our collective future."* (Center for International Environmental Law, 2021).

Acclaimed internationally for starting this action, there is nothing on offer as to how Guyana should develop as a nation without exploitation of its oil and gas resources.

A similar story is appearing in Namibia, a country endowed with mineral wealth and expansive landscapes, has long depended on the mining sector as a cornerstone of its economy. Diamonds, uranium, and other minerals continue to play a significant role in exports and national income. While agriculture stays vital for rural livelihoods, the country has historically faced challenges in diversifying its economy and reducing unemployment, especially among youth (World Bank, 2023a). Access to electricity has steadily improved in recent decades, although it stays uneven. As of 2021, only 56.7 percent of Namibia's population had access to electricity, highlighting ongoing rural-urban disparities (Trading Economics, 2024). In response, Namibia has made ambitious commitments to expand renewable energy access and achieve universal electrification by 2040, with a focus on solar and wind investments (International Energy Agency, 2023).

Education has been a consistent priority. The adult literacy rate rose to 91.5 percent in 2021, reflecting substantial gains in educational access and outreach (World Bank, 2023). UNESCO has noted that Namibia has been initiative-taking in integrating health and wellbeing into its school curriculum and making systemic reforms aimed at equity and resilience (UNESCO, 2023). More recently, the Namibian government announced that university education will be free starting in 2026, marking a bold policy shift to improve access to higher education (Associated Press, 2024). Namibia's developmental aspirations have been further energized by massive oil and gas discoveries. According to the U.S. International Trade Administration (2024), significant offshore finds in the Orange Basin—specifically the Graff-1, Venus-1, and Jonker-1X wells have attracted major global players including TotalEnergies, Shell, Chevron, and ExxonMobil. The Namibian government estimates that these reserves could hold up to 11 billion barrels of light oil and 2.2 trillion cubic feet of natural gas. If proven commercially practical, these resources have the potential to more than double Namibia's GDP by 2040 (International Trade Administration, 2024).

This emergence raises a critical question. Will global climate frameworks and environmental advocates pressure Namibia to abandon a fossil-fuel-based economic path, even as the country

looks to overcome poverty, expand infrastructure, and fund public services? Will the world tell Namibia to desist from basing its developmental aspirations on fossil fuels?

Projected Cost of Mitigation and Cost of Adapting to Climate Challenges in Africa and the Caribbean

Renewables offer the chance to leapfrog to a sustainable, prosperous future for all. Increasing access to dependable, affordable, and clean energy resources is a key priority, particularly in *sub-Saharan Africa.* Around 600 million Africans lack reliable electricity access, which is nearly half the population (International Energy Agency, 2024).

Africa could meet nearly a quarter of its energy needs from Indigenous and clean renewable energy by 2030. Modern renewables amounting to 310 gigawatts (GW) could provide half the continent's total electricity generation capacity. A transformation of this scale in Africa's energy sector would require an average annual investment of US&70 billion by 2030, resulting in carbon dioxide emissions reductions of up to 310 megatons per annum (International Renewable Energy Agency, 2015, p.2).

Turning to the Caribbean, the cost of the Caribbean energy transition to ease a reduction in carbon dioxide emissions is around $83 billion to achieve 90% renewable energy by 2038 (Carasco, 2024). The Caribbean is one of the most exposed regions to climate related natural disasters, with estimated adaptation investment needs of more than $100 billion, equal to about one-third of its annual economic output (Guerson et al., 2023).

The story appearing out of Africa is even more distressing. Africa's adaptation costs will be between $20 billion and $30 billion annually over the next 10 to 20 years (African Development Bank, 2011). According to Ijjasz-Vasquez and Saghir (2023), climate adaptation finance in Africa in the years 2019 and 2020 would amount to $29.5 billion and 39% was for adaptation investment. Further analysis of Nationally Determined Contributions (NDCs) shows that the adaptation finance needs for the continent over the period 2020-30 are close to $580 billion. Unless adaptation finance increases substantially in Africa, a gap of $453 billion will accumulate.

Reality: Who Should Pay for Consequences of Climate Change?

In 2024, the global economic landscape revealed notable disparities in the distribution of economic output across various regions. According to the Federal Reserve Bank of St. Louis (2025), world GDP was about $111.326 trillion. At the forefront, high-income countries dominate the global economy, contributing a substantial $71.52 trillion, constituting around 64% of the world's total GDP. This significant share underscores the economic prowess of these nations, reflecting their advanced infrastructure, technological innovation, and overall elevated levels of productivity. The disparity between high-income countries and other regions is pronounced, revealing a pronounced concentration of economic power within these developed nations.

In stark contrast, the Caribbean region's economic output is $151.78 billion, standing for around 1.3% of the global GDP (International Monetary Fund, 2025). This illustrates the Caribbean's relatively modest economic scale on the world stage. Despite the Caribbean's rich cultural heritage and tourism-driven economy, its economic output stays limited compared to the larger global economy, highlighting the challenges smaller economies face in scaling up their economic influence.

According to the International Monetary Fund (2025) with a GDP of $2.83 trillion, Africa accounts for less than 3% of the world's total GDP. While this figure signifies a more substantial

contribution than the Caribbean, it still reflects the vast economic disparity between Africa and high-income regions. Several factors influence Africa's economic output, including resource wealth, demographic growth, and socio-political stability. Despite the continent's rich natural resources and growing markets, its economic impact stays significantly lower compared to high-income regions. The data from 2024 highlights the unequal distribution of economic power globally. With their advanced economies, high-income countries capture most of the world's economic output, while regions like the Caribbean and Africa contribute a relatively small part. This uneven distribution reflects historical and structural economic disparities and underscores the ongoing challenges faced by lower-income regions in achieving economic parity with their more affluent counterparts. The global economic landscape is thus characterised by significant imbalances, with a clear concentration of wealth and economic influence in high-income nations. Clearly, most developing countries cannot meet their survival needs in a world being transformed by climate change.

Climate Finance

According to the United Nations Framework Convention on Climate Change [UNFCCC], (n.d.) 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 to address climate change. It refers to the financial resources gave to support climate change mitigation and adaptation efforts. It plays a critical role in enabling countries and communities to address the impacts of climate change and transition to a low-carbon economy. As the climate crisis intensifies, the importance of climate finance has become increasingly clear in ensuring that both developed and developing nations can effectively implement their climate strategies.

Climate finance is instrumental in advancing both mitigation and adaptation goals. The Green Climate Fund [GCF], (2023), set up under the UNFCCC provides financial aid to developing countries for climate mitigation. This includes investments in clean energy technologies, forest conservation, and climate-resilient agriculture. Similarly, Adaptation Fund, (2022) deals with managing unavoidable impacts of climate change by supporting initiatives such as flood defences, drought-resistant crops, and improved water management systems.

Climate finance originates from various sources, including public, private, and blended finance. Governments and international organizations play a crucial role in providing climate finance through direct funding, grants, and loans. The World Bank (2021) and the European Commission (2020) are major funders of climate-related research and innovation that support climate-related research and development. The private sector contributes significantly to climate finance through investments in renewable energy, green bonds, and carbon markets. Private companies and financial institutions increasingly recognise the financial opportunities associated with climate action and are mobilizing capital for sustainable projects (Climate Finance Leadership Initiative, 2021). Blended finance combines public and private resources to de-risk investments and attract more capital. By using public funds to mitigate risks, blended finance can stimulate private sector involvement in climate projects. Examples include the Climate Investment Funds, which use concessional finance to use private investments (Climate Investment Funds, 2024).

Despite its importance, climate finance faces several challenges. One major issue is the lack of transparency and accountability in the allocation and use of funds. Ensuring that climate finance reaches the intended beneficiaries and achieves its goals requires robust monitoring and reporting mechanisms (Organisation for Economic Co-operation and Development, 2021).

Another challenge is addressing the needs of the most vulnerable countries and communities, which often have limited capacity to access and use climate finance effectively.

"*The Caribbean faces about US$12.5 billion in annual economic losses from natural hazards*" (Guardian Media Limited, 2024). This burden cannot be met through government spending and borrowing alone, highlighting the need for private sector involvement, concessional financing, and long-term investment a call echoed by leaders like Mia Mottley. The Inter-American Development Bank [IDB], (2022) estimates that meeting climate goals in Latin America and the Caribbean will need 7–19% of GDP by 2030 ($470 billion–1.3 trillion). The Caribbean experiences natural disasters more often and at higher costs than any other region, with two-thirds of disasters in small states since 1950 striking the Caribbean, causing over 250,000 deaths and affecting 24 million people (United Nations Development Programme, 2020). Despite these urgent concerns, no concrete solutions for climate finance have yet been developed.

Opportunities for enhancing climate finance include expanding innovative financing mechanisms, such as climate bonds and impact investing, and increasing collaboration between the public and private sectors. Strengthening international cooperation and ensuring that climate finance is aligned with sustainable development goals are also critical for achieving effective climate action (Climate Policy Initiative, 2020). Climate finance is a crucial element in the global climate change response, enabling mitigation and adaptation efforts. While considerable progress has been made, addressing the financial gap and overcoming challenges requires continued innovation, collaboration, and stakeholder commitment. The world can advance towards a more sustainable and resilient future by effectively mobilising and utilising climate finance.

Climate Reparations

Defining Climate Reparations

Climate reparations encompass a broad and complex range of proposals and actions to address unrestrained capitalism' enduring and continuing legacy, which has relied heavily on fossil fuels. This dependency has led to a massive increase in GHG emissions, resulting in significant climate change. The unrestrained use of fossil fuels by a minority of nations has continued for centuries, inflicting profound economic and social harm on humanity, particularly in developing countries. Climate reparations recognise that climate change can have differing social, economic, public health, and other adverse impacts on developing countries. These impacts are mainly due to the overwhelming contribution of developed nations to GHG emissions.

Climate reparations can take various forms, including executing mitigation measures to reduce GHG emissions, mainly through the use of fossil fuels and enhancing the electrification needs of countries through the use of renewables, implementing adaptation strategies both in the short-term and long-term with the ultimate goal of achieving climate change resilience, compensation for loss and damage (including recovery costs) from disasters exacerbated by climate change and compensation for foregoing developmental aspirations based on the extraction of fossil fuels. These reparations aim to rectify the short- and long-term social and economic damage caused by climate change, affecting both present and future generations. The goal of climate reparations is to address the systemic and enduring adverse impacts of climate change on developing countries and look to provide a form of justice and support for those disproportionately affected. These reparations aim to rectify the short- and long-term social and economic damage caused by climate change, affecting both present and future generations.

Elements of Climate Reparations

Mitigation

Mitigation in the context of climate change refers to efforts to reduce or prevent the emission of GHGs to slow down global warming and its related effects. Mitigation strategies are designed to address the root causes of climate change by reducing the amount of GHGs released into the atmosphere or by enhancing the ability of natural systems to absorb these gases. Certain key strategies have been touted as proper for mitigating the impact of GHGs. These include the movement towards renewable energy, such as solar, wind, hydropower and geothermal energy. Energy efficiency strategies, both domestically and commercially, ought to be pursued to reduce the consumption of non-renewables. Finding options for electricity is particularly critical in Africa when, in 2021, 43% of Africans (about 600 million people) lacked access to electricity, with 590 million in sub-Saharan Africa (IEA, 2022).

The impact of forests cannot be understated. Trees absorb carbon dioxide, making deforestation controls imperative and the embrace of afforestation and reforestation critical. Given the concern about removing carbon dioxide, there has been a surge in technological innovations such as Carbon Capture and Storage (CCS) (World Resources Institute, 2021). These are just some examples of mitigation strategies, and the cost of renewables and technological innovations must be met as with other strategies. Therefore, the proper funding aid must be distributed to developing countries to play a meaningful role in mitigation.

Adaptation

The cost of adapting to climate change, which involves adjusting natural or human systems in response to actual or expected climatic stimuli or their effects to neutralise or reduce potential threats, is beyond the means of most developing countries. The natural and manufactured landscapes of countries vary widely, and therefore, vulnerability profiles shift from country to country. Consequently, adaptation strategies must illustrate great flexibility and diversity. For example, developing and planting drought-resistant crop varieties can help ensure food security in some regions like Sub-Saharan Africa (Campbell & Ajayi, 2024). Therefore, countries should develop National Adaptation Plans (NAPs); for example, Ghana's NAP includes measures for water resource management, agricultural resilience, and coastal zone management (UNFCCC, 2021). Adaptation planning is not just short-term goals of dealing with climate change exigencies but also moving towards long-term strategies through the embrace of resilience planning intended to address the reality of climate change's consequences.

The international community has already accepted to some extent, through initiatives such as the Paris Agreement, the need to ease global cooperation, where developed countries provide financial and technical support to developing nations for climate adaptation.

Loss and Damage

Compensation for loss and damage due to climate change is a critical issue in international climate negotiations, particularly within the framework of the UNFCCC. The concept involves addressing the adverse effects of climate change that are not adequately mitigated or adapted to, leading to significant losses and damages, particularly in vulnerable countries and communities. By loss, it means the irreparable impacts of climate change, such as loss of lives, species extinction, and permanent loss of land or ecosystems. Damage refers to reparable impacts, such as damage to infrastructure, economic loss due to extreme weather events, and damage to crops and property.

According to the UNFCCC (2015), Article 8 of the Paris Agreement highlights the importance of addressing loss and damage associated with the impacts of climate change, particularly in vulnerable countries. The Warsaw International Mechanism (WIM) set up under the UNFCCC (2015, p. 12) is the primary mechanism to address loss and damage. It focuses on enhancing understanding, coordination, and support for addressing loss and damage, but it does not yet explicitly include provisions for financial compensation. This is the tragedy of the emerging international legal regime for addressing climate change's consequences; developed countries refuse to accept financial responsibilities for their economic excesses. Compensation for loss and damage due to climate change is a complex and evolving issue within international law. While the Paris Agreement and mechanisms like the WIM provide a foundation, there is still no clear, agreed-upon mechanism for direct compensation.

An easy example of the issue of recovery aid in the context of loss and damage, can be seen when a natural disaster strikes as there is often a terrible cost to be borne by the affected country. There is recourse to several funding and rebuilding mechanisms in the developed world, but these are sadly lacking in the developing world. For example, the situation in Grenada after the destruction wrought by Hurricane Beryl gives a vivid illustration of the short-term need to ensure the affected population's safety, health, and well-being. Lederer (2024) reported:

> “Simon Springett, the top U.N. humanitarian official for the eastern Caribbean and Barbados… said he didn’t want to sound over-dramatic, “but the islands were really dramatically, catastrophically, catastrophically hit.”…people’s lives and livelihoods have been destroyed, and he urged donors to be generous in helping Grenada and St. Vincent and the Grenadines recover.”

Clearly, there is a need for a global effort to bridge the response gap to disasters worsened by climate change, for which the developing world has largely been innocent. Loss and damage suffered by developing countries due to climate change must come to the forefront in the emerging international legal regime dealing with climate change.

Ignorance as a Defence

The story in Guyana and Namibia speaks of the continuing economic importance of the fossil fuel industry. Developing countries will simply not forgo a once-in-a-lifetime opportunity to drag themselves out of the quagmire of poverty. If the developing world is concerned about the “carbon bomb”, they must bear the significant cost of defusing it.

Ignorance is not a defence concerning the claim for climate reparations. The alarm bells on GHG emissions were rung almost 200 years ago. History of Information (2024) showed that Jean-Baptiste Joseph Fourier (1768–1830) was a French mathematician and physicist whose work laid foundational principles for studying climate change and the greenhouse effect. His contributions were instrumental in understanding how Earth's atmosphere interacts with solar radiation. Fourier's insight into how gases in the atmosphere could absorb and re-radiate heat was a pioneering step in the development of climate science.

In 1856, decades before the term “greenhouse gas” was coined, Eunice Newton Foote (1819–1888) an American scientist and inventor, placed a glass cylinder full of carbon dioxide in sunlight and found that it heated up much more than a cylinder of ordinary air. Foote's pioneering research on how gases affect the Earth's temperature was a significant contribution to our understanding of climate change (Shapiro, 2022).

Foote was followed quickly by John Tyndall (1820–1893), an Irish physicist whose pioneering research in the mid-19th century significantly advanced the understanding of the greenhouse

effect and its role in climate change. Tyndall (1861) prove how certain gases in the atmosphere trap heat, laying the groundwork for modern climate science.

Finally, science achieved an early understanding of GHG emissions and their impact on climate change through the work of Svante Arrhenius (1859–1927), a Swedish scientist who won a Nobel Prize for Chemistry. His work in the late 19th and early 20th centuries significantly advanced the understanding of GHGs and their role in climate change. Arrhenius is best known for his pioneering contributions to studying the greenhouse effect and its relationship with carbon dioxide (CO_2) levels in the atmosphere. Arrhenius' (1896) work proven the greenhouse effect could lead to significant global warming, a concept initially met with scepticism but has since become a central element of climate research. Global warming due to GHG emissions has been known for around 200 years, and understanding this phenomenon did not deter the developing world from its mad rush to industrialise.

Global Climate Reparations Fund (GCRF)

After nearly thirty years of advocacy by developing countries, a significant breakthrough was achieved at the 2023 United Nations Climate Change Conference (COP28) in Dubai world leaders unanimously agreed to set up a "loss and damage" climate reparations fund. This fund looks to address the inequity faced by vulnerable countries that contribute the least to global emissions yet suffer the most from climate-induced disasters such as droughts, rising sea levels, and hurricanes. With first pledges surpassing $650 million, the fund is intended to provide financial support for unavoidable climate impacts. However, this amount is viewed only as seed capital, falling far short of the estimated $580 billion needed annually by 2030 (Sadasivam, 2024). The operationalization of the fund entered its complex implementation phase. A newly constituted 26-member board was tasked with proving the administrative, institutional, and financial architecture necessary to disburse funds effectively. Their agenda included procedural matters like appointing co-chairs and selecting a host country, as well as substantive issues such as eligibility criteria, fundraising mechanisms, and the potential role of the World Bank in managing the fund (Sadasivam, 2024).

A major point of contention appeared was the possible role of World Bank as the fund’s trustee. While developed nations argue that the Bank's administrative ability makes it a suitable custodian, developing countries have expressed strong reservations, citing historical grievances over the Bank’s conditional lending practices and its perceived exacerbation of debt crises. A compromise was reached in Dubai allowing the Bank to host the fund on an interim basis, contingent on its acceptance of 11 specific conditions. These include enabling direct access to funds by recipients without intermediaries. If the World Bank ultimately fails to meet these conditions, the fallback plan is to set up a new, fully independent fund. The overarching challenge stays fundraising. Current pledges are dwarfed by the scale of need, and the absence of a clear strategy to mobilize trillions of dollars threatens to undermine the fund’s long-term effectiveness. As Brandon Wu of ActionAid USA sees, unless this ambition gap is addressed, the fund risks becoming a symbolic gesture rather than a transformative mechanism for climate justice (Sadasivam, 2024). This is where the Global Climate Reparations Fund (GCRF) becomes a more attractive alternative.

The GCRF is designed to address the historical and ongoing impacts of climate change, particularly on developing nations that are disproportionately affected by the actions of more industrialised countries. The fund will finance projects that mitigate climate change effects, support adaptation efforts, provide compensation to deal with immediate consequences of climate change, assist with the electrification of countries through the use of renewables and

provide compensation for nations approved for foregoing development objectives through the exploitation of fossil fuels.

The GCRF will be administered by a Global Climate Finance Bank (GCFB), which will manage distributing, checking, and evaluating the projects funded. The GCFB will be governed by a board with equal representation from developed and developing countries, ensuring that decisions are made equitably and considering the needs of all stakeholders. No more than 15% of the fund's income will be spent on administrative costs. This ensures that most of the funds are directed toward project implementation rather than overhead expenses. All nationals from the developed world must contribute a fixed percentage of their income, which will be collected nationally and remitted to the GCRF. This acknowledges these nations' significant role in global GHG gas emissions and their responsibility to address climate change.

Developed countries must contribute to the fund from their national income, ensuring a steady stream of funding from the wealthier nations that have historically contributed the most to climate change. Companies engaged in oil and gas production will be needed to pay a special tax based on their production scale. This tax will be collected nationally and remitted to the GCFB, ensuring that corporations contributing to environmental degradation also contribute to its mitigation.

Funds lent to nations must be spent 100% on direct project implementation. This includes initiatives such as renewable energy projects, reforestation, sustainable agriculture, and infrastructure improvements to withstand climate impacts. The GCFB will provide oversight to ensure funds are used effectively and efficiently. This will involve regular audits, progress reports, and on-site inspections to ensure compliance with funding agreements.

Conclusion

Examining climate change's impacts on vulnerable regions like the Caribbean and Africa illuminates a stark landscape of injustice and disparity. As the planet faces escalating environmental crises, the disproportionate burden borne by these regions underscores the urgent necessity for global climate justice. This study has shown that despite contributing minimally to global GHG emissions, countries in the Caribbean and Africa endure severe environmental, economic, and health impacts due to their exposure to climate hazards and inherent vulnerabilities. The study underscores the urgent need for climate reparations as a critical step toward achieving global climate justice. By assessing the historical and contemporary factors driving climate change, the discussion highlights the persistent inequalities that continue to marginalize these regions.

The proposed GCRF stands for a practical and necessary solution to address these disparities. This mechanism can help vulnerable communities build resilience against climate-related adversities by mobilising resources for mitigation, adaptation, and compensation. The success of this initiative will depend on the collective will of the international community to acknowledge historical responsibilities and support fair climate action. The author advocates for the continued collaboration between Caribbean and African nations, creating a united front to influence global climate policies and secure necessary financial commitments. As climate change intensifies, the moral and practical imperatives for climate reparations become even more clear.

The creation of a Caribbean-African Alliance aims to strengthen advocacy for climate justice while offering recommendations to enhance climate finance mechanisms that support sustainable development and long-term resilience.

Ultimately, addressing climate change requires more than scientific and technological solutions; it demands a commitment to justice, fairness, and global solidarity. Only through these concerted efforts can we hope to protect our planet and ensure a sustainable and fair future for all, particularly for those who have contributed least to the crisis but stand to suffer the most from its consequences. The path forward must integrate the principles of climate justice and climate finance into all sides of climate action, ensuring that today's policies lay the groundwork for a fairer, more sustainable world for future generations.

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