

Policy Case Analysis On Climate Change Mitigation And Adaptation Policy: Implications For Developing Countries

Omotola Oladapo Elizabeth

Georgia State University, AYPS, Atlanta, GA, USA

Abstract—This study investigates the dynamic governance of climate change mitigation in developing and underdeveloped nations, which involves global governance, interactive governance, and multi-level governance. It discusses the structural difficulties of climate mitigation governance, with an emphasis on the interactions between international, regional, national, and local players. It also highlights the key forms of governance, such as instruments for action, authority, accountability, efficiency, complexity management, deliberativeness, roles of power, and the role of government, which are analyzed to uncover systemic challenges. The analysis states governance issues, such as weak representation, insufficient financial and technical capacity, policy fragmentation, and accountability deficits. These issues are compounded by inequities in resource distribution and decision-making power, disproportionately impacting vulnerable populations in most developing countries. Applying insights, the case analysis mentions the need for inclusive, participatory governance mechanisms, stronger accountability frameworks, and capacity-building to address these climate change challenges in developing nations. This case analysis concludes that effective climate change mitigation in developing countries requires a coordinated, multi-level approach that integrates global norms, national strategies, and local implementation. By addressing governance gaps, stakeholders can enhance equity, efficiency, and sustainability in global climate action.

Keywords—Climate change, mitigation, developing nations, Global governance, Multi-level governance, Hierarchy Governance, Accountability, Equity, Network governance, greenhouse gas emissions(GHG).

INTRODUCTION

1.0 Case Description

Climate change is a global crisis altering every corner of our planet. While world powers and international bodies such as the United Nations and European Union are leading efforts to mitigate its effects, developing countries disproportionately bear the burden of its negative consequences (United Nations, 1999). Developing countries are going through severe climate-related challenges, including

extreme weather events, rising sea levels, and disrupted agricultural patterns, despite contributing insignificantly to greenhouse gas emissions (USGLC, 2021).

Climate change impacts developing countries more severely than developed ones, especially developing nations with weak economies and vulnerable populations, bearing the load of its effects. The developed countries are particularly vulnerable due to a variety of issues, including their geographic location, reliance on agriculture, and limited ability to adapt and mitigate climate change. Many of these developing and underdeveloped nations are located in areas particularly prone to extreme weather events such as hurricanes, droughts, and flooding, with regions like Sub-Saharan Africa experiencing desertification and low-lying nations like Bangladesh battling with rising sea levels.

The geographic exposure worsens their risk. Heavy reliance on agriculture for livelihood and economic sustenance further heightens their susceptibility. Crops and livestock are highly sensitive to climate variability, with droughts, floods, and other climatic shocks devastating food security and economic stability, as seen in Ethiopia and Bangladesh. Poor infrastructure, funding gaps, and a lack of access to advanced technologies leave countries like Mozambique particularly vulnerable to repeated climate shocks, trapping them in a cycle of risk and underdevelopment. These interconnected factors amplify the socioeconomic challenges posed by climate change, making sustainable development increasingly difficult. Climate change deepens existing economic and social vulnerabilities in poor nations, resulting in food and water insecurity, health concerns, slowed economic progress, increased instability, and forced displacement.

Policy Background

The global community has established agreements like the Paris Agreement to reduce greenhouse gas emissions and to prepare for the adverse effects of climate change. The agreements encourage countries to use cleaner energy sources, lessen their reliance on fossil fuels, and protect natural resources to help combat climate change (UNFCCC, n.d.). The Paris Agreement is based on voluntary commitments made through Nationally Determined Contributions (NDCs), which indicates that each country determines its own goals. This self-

regulatory strategy sometimes overlooks the unique constraints of poor countries, which face limited resources and require additional aid for implementation.

The agreement supports financial assistance that is frequently insufficient, developing nations are usually underrepresented in committees of financial decision-making (UNFCCC, n.d.). The mandates provide difficulties for underdeveloped and developing nations that lack the infrastructure, technology, and financial means necessary to accomplish climate commitments and are frequently diverting important funds away from other development priorities to combat the climate change challenges. As these developing and underdeveloped nations work to modernize their economies while addressing pressing environmental challenges, they face the dual challenge of reducing emissions and adapting to the impacts of climate change (World Economic Forum, 2023).

Several institutions, including governments, businesses, and foundations, have joined forces to address climate change in underdeveloped and developing countries such as initiatives led by the Green Climate Fund, the Bill and Melinda Gates Foundation, and the Rockefeller Foundation that help these countries adapt to the effects of climate change by lessening the burden on these countries (USGLC, 2021). However, accessing resources from systems like the Green Climate Fund (GCF) is often hindered by bureaucratic delays in the processing of fund release and prioritization issues, leaving these nations struggling with inadequate support (Green Climate Fund, 2024).

Economic Strain on Developing Countries

It is often the case that already strained budgets in developing countries are bled dry by the requirement to invest substantial sums in climate adaptation and mitigation; by 2030, climate change could push an extra 100 million into poverty, say the economists at the World Bank (World Bank, 2024). The manmade outcomes of climate change bring extreme weather events and the cost of changing infrastructure to make it more climate resilient often requires foreign loans that could saddle the country with decades of debt. Climate change has worsened economic inequality between developed and developing countries, raising the gap by 25% since 1960. (USGLC, 2021)

Health and Environmental Equity

There are major public health consequences for the impact of climate change in developing nations; in the tropics, for example, warmer temperatures lead to faster development of vector-borne diseases such as dengue, Zika, and malaria. According to the World Health Organization, as many as 250,000 extra deaths per year could be attributed to diseases aggravated by climate change by 2050, due to the health risks associated with global warming. Organizations such as the Red Cross highlight how

the combined impacts of COVID-19 and climate change exacerbate global health and humanitarian crises, disproportionately affecting vulnerable populations with limited infrastructure and access to healthcare (USGLC, 2021a).

Technology and Infrastructure Gap

Access to technology is critical for successful climate adaptation; however, developing countries frequently lack easy and affordable access to green technologies. Implementing improved farming methods, disaster-resistant infrastructure, and renewable energy sources is also too pricey (USGLC, 2021). This inequality in access to technology further intensifies the division between developed and developing nations, placing poorer countries in a challenging position regarding emission reductions and preparation for the impacts of climate change.

Resource Allocation and Social Inequity

Redirecting financial resources from social programs aimed at improving health, education, and poverty alleviation is often necessary to meet international climate objectives (IISD Events, 2024). Despite contributing only a small percentage to global emissions, developing nations disproportionately face the challenges of resource constraints, forced relocation, and extreme weather conditions. More than half of people experiencing food insecurity reside in rural areas that depend heavily on agriculture and are particularly susceptible to climate change. Eighty million people have already been displaced by conflict and terrorism in fragile states impaired by extreme weather. The World Bank estimates that climate change-induced food and water shortages and natural disasters could displace an additional 143 million people by 2050 (USGLC, 2021). This projection highlights the urgency of implementing comprehensive and equitable climate adaptation strategies, emphasizing the need for global cooperation to mitigate displacement risks and support vulnerable populations effectively.

Case Studies

The World Bank's projection of 143 million people potentially displaced by climate change-induced food and water shortages and natural disasters by 2050 aligns closely with the vulnerabilities observed in Ethiopia, Ghana, and Mozambique. These nations exemplify how climate change intensifies pre-existing socio-economic and environmental challenges. For instance, Mozambique's frequent exposure to tropical cyclones and flooding severely impacts its infrastructure and population. Meanwhile, Ethiopia and Ghana, with economies heavily reliant on agriculture and dependent on water from large international river basins, face compounded risks from changing rainfall patterns and water scarcity. These cases highlight the urgent need for tailored climate adaptation and resilience strategies that address both immediate and systemic challenges, ensuring these countries can mitigate displacement risks effectively.

Vietnam and Bangladesh are among the most climate-vulnerable nations in Asia due to their susceptibility to extreme weather events and flooding. The majority of their populations and economic activities are concentrated in coastal and low-lying delta regions, which are particularly at risk from rising sea levels and storm surges. This geographic concentration not only exacerbates the impact of climate-related risks but also increases the strain on infrastructure and disaster response systems, highlighting the urgency of robust adaptation measures (World Bank, 2011)

Accumulating temperatures and reduced rain have led to desertification in Nigeria. Consequently, agricultural productivity went down, heightened food insecurity and adversely affected the overall livelihoods of people in Nigeria. Nigeria faces the challenge of balancing its economic reliance on agricultural expansion with the need to comply with international climate regulations aimed at reducing emissions. While agriculture is vital for the country's economic growth and food security, it is also a significant source of greenhouse gas emissions. International climate policies often emphasize emissions reductions, which can impose constraints on agricultural development in nations like Nigeria. This creates tension between meeting global climate goals and addressing local economic and developmental needs. These problems show how climate policy demands worsen local socioeconomic problems by contributing to higher poverty rates and being associated with more regional conflicts over resources (USAID, 2024).

Climate policies must incorporate mechanisms that support economic growth, resilience building, and local capacity development in vulnerable nations. This approach would ensure that global climate objectives do not unintentionally hinder the socioeconomic progress of the world's most affected regions. Collaborative solutions, such as increasing the representation of developing countries in climate decision-making bodies and ensuring adequate financial and technological support, are essential for addressing these intertwined challenges (IISD Events, 2024).

GOVERNANCE STRUCTURE IN CLIMATE CHANGE MITIGATION: A COMPLEX WEB OF ACTORS AND CHALLENGES.

Multi-Level Governance (MLG) Framework

The governance structure addressing climate change in developing countries reflects a multi-level system that presents a complex interplay of international agreements, national policies, and initiatives at the local level (Pangalos, 2023). Interactive governance recognizes the active involvement of diverse stakeholders beyond formal institutions. Non-state actors like NGOs, private businesses, and community groups are critical in advocating for policies that address grassroots concerns, providing funding and technical expertise,

and facilitating implementation and capacity-building (Di Gregorio et al., 2019).

Global or International governance focuses on norms, institutions, and rules established at the international level. In climate change mitigation, this includes instruments like the Kyoto Protocol and the Paris Agreement, financial mechanisms such as carbon markets, and international climate funds (*World Resources Institute*, 2023). The normative principles of equity, Common But Differentiated Responsibilities (CBDR), and sustainability are key principles in international environmental law, especially in climate change governance. This originates from the 1992 Rio Earth Summit and is enshrined in the United Nations Framework Convention on Climate Change (UNFCCC). CBDR remains a cornerstone of climate negotiations, reflecting the ethical and practical need for equity in global environmental governance (Barthelemy, 2015).

International/ Global Level

Agreements like the Paris Agreement through institutions like the United Nations Framework Convention on Climate Change (UNFCCC) coordinate collective actions while aiming for global cooperation, reflecting existing power imbalances between the great power nations and the developing nations (IISD Events, 2024). The voluntary nature of Nationally Determined Contributions (NDCs) allows for discrepancies in ambition levels, with developing countries often struggling to meet their targets due to limited resources made available to them. The inadequate representation of developing nations in decision-making bodies hinders their ability to influence policy and resource allocation. The lack of robust accountability mechanisms further undermines the effectiveness of these agreements in ensuring equitable climate action (Prabin, 2024).

Regional Level: Regional bodies often serve as intermediaries between international agreements and national policies, facilitating cooperation, knowledge sharing, and resource mobilization among countries within a specific geographical area. Groups such as the Asian Development Bank, and the African Development Bank, act as policy innovators and can play a critical role in financing climate-resilient infrastructure projects and supporting capacity-building initiatives in developing countries within their respective regions integrating markets and hierarchical regulatory frameworks to achieve emissions reductions and create a sustainable environment (Di Gregorio et al., 2019).

National Level: National governments are tasked with translating international commitments into concrete policies and actions. However, they often face a daunting task, navigating between the ambition of climate goals and the reality of limited infrastructure, technology, and financial resources. The situation where these nations are forced to divert crucial funds from other development priorities, such as healthcare and education, to address climate

change impacts, further highlights the trade-offs and difficult choices developing countries confront (Scoville-Simonds & Morgan, 2016).

Local Level: Cities, communities, NGOs, and civil society organizations are increasingly taking the lead in climate action, showcasing innovative solutions and local adaptation strategies. However, these efforts often lack the necessary financial support and integration into national and international frameworks (ICLEI, 2017).

Forms of Governance in Climate Change Mitigation in Developing Countries.

The **three dominant forms of governance**, hierarchies, markets, and networks—shape the global response to climate change in distinct ways. Addressing climate change in developing countries requires nuanced governance approaches that incorporate hierarchical, market-based, and network governance models. Each form of governance plays a critical role, particularly when applied to developing

countries such as Ethiopia, Nigeria, Bangladesh, Mozambique, and Vietnam, which face distinct challenges in climate mitigation efforts (Oulu, 2021).

Hierarchy Governance

Hierarchy governance in climate mitigation is a top-down control that involves government-driven initiatives where authority resides primarily with national or regional institutions. In climate change mitigation, hierarchical governance enables the enforcement of policies like National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) (*NDC-NAP Alignment*, 2024). In Nigeria, the federal government has introduced key policies such as the National Adaptation Strategy and Plan of Action on Climate Change and commitments under the Paris Agreement. Despite these efforts, challenges persist due to weak local capacity and limited integration of climate policies with development plans (USAID, 2024).

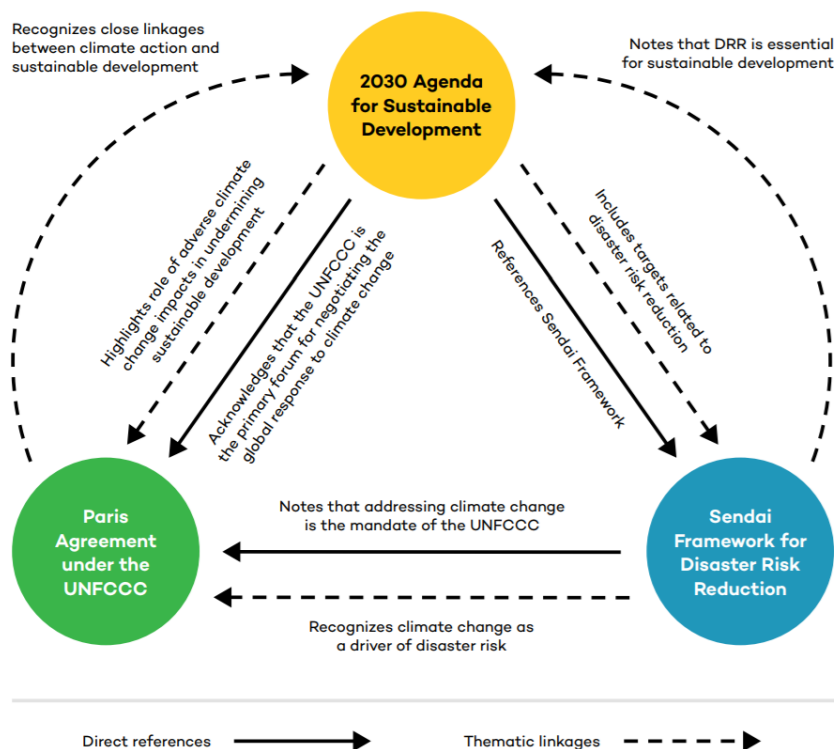


Figure 1: NDC-NAP Alignment adopted from NAP Global Network

Market Governance

Market governance uses economic incentives and market-based mechanisms to drive climate action. Tools such as carbon markets, green bonds, and private investments are central to this approach. Market-based governance leverages economic incentives and private-sector engagement to address climate challenges. In Nigeria, the launch of the Sovereign Green Bond exemplifies this approach, mobilizing resources for renewable energy and agricultural sustainability projects (Okereke, 2024). Such initiatives encourage investment in green

projects while aligning with international climate finance mechanisms like the Green Climate Fund (GCF). Despite progress, market governance faces barriers such as weak regulatory frameworks and the high cost of renewable energy technologies. To overcome these challenges, developing nations can incentivize private-sector participation through tax breaks, subsidies, and public-private partnerships (PPPs).

Network Governance

Network governance emphasizes collaboration and interaction across sectors and levels of government,

fostering partnerships among global, public, private, and civil society actors. This model thrives in addressing climate challenges that cut across boundaries. Network governance emphasizes collaboration among diverse stakeholders, including national governments, private organizations, NGOs, civil society, and international organizations. In Nigeria, this approach is crucial for tackling transboundary issues like desertification and water resource management. For instance, regional cooperation through bodies like the Economic Community of West African States (ECOWAS) facilitates shared strategies and resource mobilization for climate adaptation (NEST, 2022).

Local community involvement in climate governance is also vital. Engaging indigenous communities, farmers, and other stakeholders in policy design and implementation ensures inclusivity and accountability. For example, coastal communities in the Niger Delta can contribute to mangrove restoration efforts through co-management arrangements. Additionally, Nigeria can strengthen ties with global networks, such as the C40 Cities Climate Leadership Group, to exchange knowledge on sustainable urban development and infrastructure (Di Gregorio et al., 2019).

Central Framework of Interaction

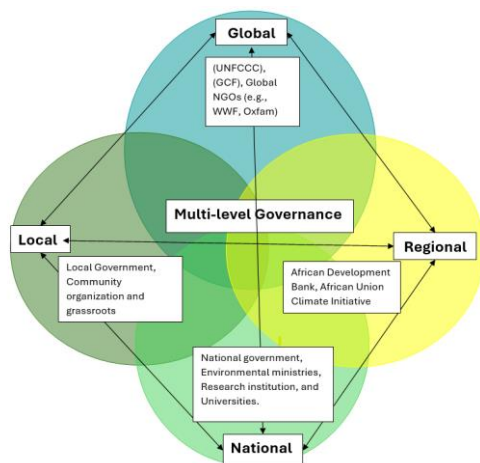


Figure 2: Interactive Governance of Climate mitigation in developing countries.

Governance Issues at the Heart of the Crisis

The interconnected governance issues that impede effective climate change mitigation in developing countries:

- **Representation and Power Imbalances:** Developing countries face marginalization when it comes to international climate negotiations, their opinions are frequently ignored, and their demands are not effectively addressed. This power discrepancy results in an unequal allocation of resources and influence, sustaining a cycle of vulnerability and limited agency.
- **Financial Constraints and Access Barriers:** The significant financial gap, with developing

countries unable to obtain and mobilize the resources required for successful climate action. The promised financial aid from industrialized nations frequently falls short, and existing institutions such as the Green Climate Fund (GCF) are hampered by bureaucratic difficulties and access restrictions, leaving poor countries with insufficient assistance.

- **Capacity Gaps:** The lack of technical competence, institutional capacity, and infrastructure impedes poor countries' ability to execute and monitor climate policies and programs. An urgent need for technology transfer, knowledge sharing, and capacity-building activities adapted to the individual situations and needs of these countries.
- **Conflicting Priorities:** Developing countries are in a difficult situation, trying to balance climate action with other pressing development needs. The difficult situation in which committing limited resources to climate mitigation frequently comes at the expense of vital social and economic development goals, thereby worsening existing inequities.

Recommendations to Address Governance Challenges in Climate Change Mitigation in Developing Countries

Governance challenges in climate change mitigation require targeted solutions that align with Nigeria's unique political, economic, and social contexts. Below are combined and streamlined recommendations for strengthening hierarchical, market, and network governance, along with strategies for multi-level governance and accountability.

Strengthening Hierarchical Governance

Decentralization and capacity building at the state and local levels are essential for implementing effective climate change policies in Nigeria. Training local governments in climate-related administrative skills and resource management can empower them to take the lead in initiatives like reforestation and sustainable agriculture. This requires allocating budgetary resources and establishing climate task forces at state levels to coordinate localized efforts.

Policy coherence remains a significant challenge, as climate priorities often conflict with Nigeria's economic development goals, particularly in agriculture and energy. Aligning Nationally Determined Contributions (NDCs) with domestic development plans can ensure consistency across ministries and avoid resource duplication. Establishing inter-ministerial committees dedicated to harmonizing climate and economic policies will streamline implementation. Additionally, transparent Monitoring and Evaluation (M&E) mechanisms, supported by tools like Geographic Information Systems (GIS), can track progress and improve accountability in climate programs.

Advancing Market Governance

Expanding access to climate finance is critical for Nigeria to meet its mitigation goals. Simplifying access to international funds, such as the Green Climate Fund (GCF), and establishing a national climate fund can help pool resources for public and private investments. The Nigerian Sovereign Green Bond initiative serves as a model for financing renewable energy and adaptation projects, which can be further scaled.

To incentivize private sector engagement, Nigeria should develop clear regulatory frameworks to attract investments in renewable energy, waste management, and sustainable agriculture. Tax breaks, subsidies, and public-private partnerships (PPPs) can reduce risks for market actors and drive innovation. Establishing innovation hubs and fostering partnerships with universities can support the development of locally tailored climate solutions, such as drought-resistant crops and efficient irrigation systems.

Strengthening Network Governance

Addressing Nigeria's climate challenges, such as deforestation and water scarcity, requires regional and community-level collaboration. Regional bodies like ECOWAS can facilitate shared policy frameworks and early warning systems for climate-related disasters. Community involvement is equally important; engaging local stakeholders, including farmers and indigenous groups, in the design and implementation of policies ensures inclusivity and accountability.

Nigeria should also strengthen its engagement with transnational networks like the Global Covenant of Mayors for Climate & Energy to exchange knowledge and resources. Urban centers like Lagos and Abuja can adopt best practices in sustainable urban development by leveraging insights from global climate leadership initiatives.

Ensuring Accountability, Equity, and Deliberation

Participatory governance models are essential for equitable climate solutions in Nigeria. Establishing forums for public deliberation will allow marginalized groups, such as rural farmers and women, to contribute to climate policy discussions. Market mechanisms, like carbon pricing, should include safeguards for low-income populations, such as revenue redistribution through subsidies or rebates.

Strengthening institutional accountability is key to ensuring compliance with climate commitments. Independent oversight bodies, such as the National Climate Accountability Commission, could monitor progress and evaluate the effectiveness of policies. These structures should integrate feedback from civil society and international partners to align national strategies with global standards.

Technological Integration

Technological solutions are vital for improving governance efficiency. Nigeria can adopt digital platforms for data sharing, real-time monitoring, and stakeholder collaboration. Mobile applications for tracking reforestation and reporting progress to donors can increase transparency and accountability. Additionally, expanding early warning systems for floods and droughts, using satellite imagery and predictive analytics, can improve disaster preparedness and resilience.

In conclusion, effective climate change mitigation in developing nations necessitates an inclusive and equitable governance system that addresses representation gaps, financial restrictions, and policy complexity. By combining multi-level and interactive governance models, global players can empower local stakeholders, improve resource accessibility, and strengthen institutional capacity. Prioritizing interactive networks, accountability, and equity-driven policies will not only reduce the negative effects of climate change but will also promote resilience and long-term development in vulnerable areas.

REFERENCE

- Barthelemy, P. (2015, December 10). *The CBDR principle in the climate negotiations: Deadend or new start?* IDDRI. <https://www.iddri.org/en/publications-and-events/blog-post/cbdr-principle-climate-negotiations-deadend-or-new-start>
- Climate Governance* | World Resources Institute. (2023, December 6). <https://www.wri.org/equitable-development/climate-governance>
- Di Gregorio, M., Fatorelli, L., Paavola, J., Locatelli, B., Pramova, E., Nurrochmat, D. R., May, P. H., Brockhaus, M., Sari, I. M., & Kusumadewi, S. D. (2019). Multi-level governance and power in climate change policy networks. *Global Environmental Change*, 54, 64–77. <https://doi.org/10.1016/j.gloenvcha.2018.10.003>
- Green Climate Fund. (2024, October 31). *Approved projects* [Text]. Green Climate Fund; Green Climate Fund. <https://www.greenclimate.fund/projects>
- ICLEI, G. (2017). *Enabling subnational climate action through multi-level governance*. <https://www.climate-chance.org/en/library/enabling-subnational-climate-action-through-multi-level-governance/>
- IISD Events (Director). (2024, March 19). *Trade Policy in Support of Climate Change Adaptation and Resilient Development* [Video recording]. <https://www.youtube.com/watch?v=vxRE9mFRpFM>
- NDC-NAP Alignment*. (2024, August 13). NAP Global Network. <https://napglobalnetwork.org/themes/ndc-nap-linkages/>

NEST, I. (2022, March). *NEST INTERACTIVE* ||. <https://www.nestinteractive.org/>

Okereke, C. (2024, July). Multilevel Climate Action: Importance of Subnational Climate Policies, Action Plans. Professor Chukwumerije Okereke. <https://chukwumerije.com/multilevel-climate-action-importance-of-subnational-climate-policies-action-plans/>

Oulu, M. (2021). Climate Change Governance: Emerging Legal and Institutional Frameworks for Developing Countries. In W. Leal Filho (Ed.), *Handbook of Climate Change Adaptation* (pp. 1–21). Springer. https://doi.org/10.1007/978-3-642-40455-9_9-1

Pangalos, C. (2023, April 26). *Tackling climate change through multi-level governance, systems thinking and policy coherence* | UNSSC | United Nations System Staff College. <https://www.unssc.org/news-and-insights/blog/tackling-climate-change-through-multi-level-governance-systems-thinking-and>

Prabin, M. (2024, August 23). *UN DESA Policy Brief No. 162: Multilevel Governance for Climate Change Mitigation and Adaptation* | UN DESA Publications. <https://desapublications.un.org/policy-briefs/un-desa-policy-brief-no-162-multilevel-governance-climate-change-mitigation-and>

Roome, J. (2015, November 8). *Rapid, Climate-Informed Development Needed to Keep Climate Change from Pushing More than 100 Million People into Poverty by 2030*. World Bank. <https://www.worldbank.org/en/news/feature/2015/11/08/rapid-climate-informed-development-needed-to-keep-climate-change-from-pushing-more-than-100-million-people-into-poverty-by-2030>

Scoville-Simonds, M., & Morgan. (2016). The Governance of Climate Change Adaptation Finance—An Overview and Critique. *International Development Policy* | *Revue Internationale de Politique de Développement*, 7.1, Article 7.1. <https://doi.org/10.4000/poldev.2243>

UNFCCC. (n.d.). *The Paris Agreement* | UNFCCC. Retrieved October 28, 2024, from <https://unfccc.int/process-and-meetings/the-paris-agreement>

United Nations. (1999). *What Is Climate Change?* United Nations; United Nations. <https://www.un.org/en/climatechange/what-is-climate-change>

USAID. (2024, November 1). *Nigeria Climate Change Country Profile | Fact Sheet | Africa*. U.S. Agency for International Development. <https://www.usaid.gov/climate/country-profiles/nigeria>

USGLC. (2021a). *COVID-19 Brief: Impact on Climate*. USGLC. <https://www.usglc.org/coronavirus/climate/>

USGLC. (2021b, March). *Climate Change and the Developing World: A Disproportionate Impact* – USGLC. <https://www.usglc.org/blog/climate-change-and-the-developing-world-a-disproportionate-impact/>

Vito, D. L. (2023, January 13). *The climate crisis disproportionately hits the poor. How can we protect them?* World Economic Forum. <https://www.weforum.org/agenda/2023/01/climate-crisis-poor-davos2023/>

World Bank. (2011, June 6). *Economics of Adaptation to Climate Change: Country Case Studies* [Text/HTML]. World Bank. <https://www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change-country-case-studies>