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The Role of Global Climate Governance in Tackling Climate Change: A Case Study of Pakistan (2010-2024)

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ABSTRACT

This study examines how global climate governance regime (UNFCCC and Paris Agreement) influences national climate policy of Pakistan and her climate change mitigation and adaptation potential from 2010 to 2024. Adopting a qualitative case study research design, the study focuses on two key dimensions: (1) impact of international climate arrangements on Pakistan's climate strategy making and its implementation, and (2) Potentials of financial and technological supports to promote Pakistan's adaptive and mitigative capacities, particularly in the face of the Green Climate Funds. The results suggest that while the global governance structures have effectively influenced the design of Pakistan's policies, the execution of policies is severely hampered by institutional and governance constraints. In addition, foreign financial and technical support has contributed resources that are helpful, but which are squandered by bureaucratic bloat, political uncertainty, and limited technical capability. The study recommends that the coordinatation between global engagements to local adaptations are critical for enriching the climate resiliecne of Pakistan. It also proposes specific reforms within international financing and national governance that can help to make the burden more equally shared and to ensure the effectiveness of climate action.

INTRODUCTION

Climate change is now widely recognized as one of the defining issues of our time, with vast impacts on ecosystems, economies and human well-being. Key climate change drivers—such as fossil fuel burning, deforestation and industrial agriculture—have promoted an acceleration of atmospheric warming, contributing to a greater frequency and severity of extreme weather events, for instance flooding, heatwaves, drought and hurricanes (IPCC, 2021). While climate change is a global concern, the impacts of these challenges are unevenly distributed, with low-income, climate vulnerable countries like Pakistan being affected more than other parts of the world.

Pakistan is one of the most vulnerable to climate change countries given its reliance on agriculture, weak infrastructure and water shortages, its CDKN profile notes. The country is threatened by rising risks from glacial melt, erratic monsoons and more intense extreme weather events. Recent disasters, such as 2010 devastating floods 2015 lethal Karachi heatwave outbreaks have revealed systemic weak links in disaster preparedness and public health system (Shah et al., 2019,Shah et al., 2020). Climate change could lead to a 5.2% reduction in Pakistan's GDP in 2050, which could undermine food security, rural livelihoods, and national growth paths (Girot et al., 2018).

In response to these threats, Pakistan has set a series of national policy processes in motion, including National Climate Change Policy (2012) and its Framework for Implementation (2014), each aiming to integrate climate adaptation and mitigation concerns into development planning. These initiatives are largely informed by an array of global climate governance regimes, particularly the UNFCCC and the 2015 Paris Agreement. Underlying these frameworks is the principle of the Common But Differentiated Responsibilities (CBDR) which acknowledges that: "In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities" and that "In this context, the developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command" (UNFCCC, 1992, 2015).

Under the Paris Agreement, countries are required to submit NDCs setting out national plans to address climate change, which are then reassessed every five years to increase ambition.

International assistance, including resources and technology transfer mechanisms such as the Green Climate Fund (GCF), is crucial to the realization of NDC targets for countries like Pakistan. Nevertheless, channels for reaching and efficiently using this support are fraught with difficulties (bureaucratic barriers, limitation of the institutional capacity, complexity of financing conditions) (Girot et al. 2018).

This research examines the impact of global climate governance on Pakistan's national climate policy space from 2010 through to 2024. It specifically examines the role of global agreements in informing local adaptation and mitigation responses as well as the impact of global financial and technical mechanisms on the resilience of Pakistan to climate change.

LITERATURE REVIEW

Climate governance at the global level is built on a multilevel institutional structure based on treaties, organizations, and financial mechanisms, all designed to take collective action against the global challenge of climate change. It developed due to increasing appreciation of the fact that the problems of the environment, especially with regard to climate change, are not confined to national borders and necessitate collective responses from nations (Bodansky, 2016; Gupta et al., 2014).

The UNFCCC The United Nations Framework Convention on Climate Change (UNFCCC), which was concluded at the Rio Earth Summit in 1992, constitutes the constitution of the climate regime. This introduced the principle of Common But Differentiated Responsibilities (CBDR), acknowledging that countries have varying abilities and histories of causing greenhouse gas emissions (UNFCCC, 1992). This principle set the stage for equity based governance and has continued to be at the core of negotiations and policy.

It was introduced, yet loosely implemented, by the Kyoto Protocol (1997) which established a legally binding emissions reduction target for developed nations. Yet it was flawed by the absence of the largest emerging economies, not least China and India, which diminished its impact and reach (Victor 2011). In addition, its credibility was undermined by the absence of enforcement measures and by withdrawal by major emitters such as the United States.

The Paris Agreement (2015) represented a game-changer in the international climate regime. It established Nationally Determined Contributions (NDCs), allowing for a voluntary commitment to mitigation and adaptation targets by countries regardless of their

degree of development. This framework was intended to increase flexibility, national ownership, and inclusiveness, and have a bottom-up architecture (Bodansky et al., 2017; Höhne et al., 2017). The agreement also includes a five-year cycle of global stocktaking to review parties collective progress towards the goal of limiting global warming well below 2°C, and pursuing efforts to limit the temperature increase to 1.5°C (Rogelj et al., 2016).

Despite this progress, some academics contend that since NDCs are non-binding and based on voluntary commitments, and there are no enforcement mechanisms with teeth, then the Accord in practice will have minimal effect (Keohane, 2015); (Hale, 2016). Moreover, climate justice activists argue that the existing governance regime fails to adequately account for the power imbalances, responsibilities, and vulnerabilities that exist between countries of the Global North and the Global South (Okereke & Dooley, 2010; Roberts & Parks, 2007). Pakistan is known to be among the top 10 in the Global Climate Risk Index being one of the most climate vulnerable countries. This vulnerability is a function of biophysical and infrastructural factors and an outcome of social dimension such as exposure to climate variability and extremes, poverty, weak governance, and reliance on climate-sensitive sectors (i.e., agriculture) (Rasul & Mahmood, 2015; Rehman et al., 2024).

The Indus River Basin, on which the country's agriculture depends, is especially sensitive to variations in glacial melt and oscillations in monsoon rains. Pakistan experiences a rising incidence and intensity of climate-induced disasters, including glacial lake outburst floods (GLOFs), droughts, heat waves and devastating floods—such as the 2010 and 2022 floods displacing millions of people and causing billions in damages (IPCC, 2021; Nadeem et al., 2022).

These disasters have laid bare structural weaknesses – including poor disaster response, fragile infrastructure, and low adaptive capacity – particularly in rural areas. Climate change also has a gendered and class-based impact, with differential effects for groups that have tenuous means and institutional means of access (Ahmed et al., 2020).

Despite the passage of the National Climate Change Policy (NCCP) in 2012 and, subsequently, the Pakistan Climate Change Act (2017) and the revised NDCs, implementation has been hampered by institutional fragmentation, inadequate finance, lack of inter-governmental coordination (Iqbal et al., 2020; Masud & Khan, 2023). Even though 'climate

adaptation has been embedded to official narratives', the gap between framing and implementation is large (Grimm and Meerow, 2016).

The impact of international climate governance on Pakistan's domestic climate policy is becoming more apparent. Pakistan has formulated and updated its NDCs following international standards for mitigation and adaptation (Rehman et al., 2024) through the processes namely the UNFCCC and PA, i.e., that includes NDCs.

International governance mechanisms, including the GCF, the GEF, bilateral donors and other cooperative arrangements, offer financial and technical support towards numerous climate-resilient agriculture, renewable energy and water project interventions in developing countries (Mumtaz et al., 2019; Fünfgeld & Schmid, 2020). Accessing such assistance however, is fraught with difficulties; "long bureaucratic procedures, low capacity to develop bankable projects and weak financial governance mechanisms" impede the efficient uses of these funds (Masud et al., 2021; Saddiqa et al., 2022).

Pakistan also has joined international transparency and reporting systems, e.g. Biennial Update Reports (BURs) and National Communication. This is said to have helped in data gathering and cross-ministerial cooperation to an extent although quality and timeliness of reporting are still erratic owing to institutional silos and redundant mandates (Shawoo & McDermott, 2020). Moreover, it has been observed that, even though Pakistan's policies are formally in line with global climate targets, implementation on the ground often fails to include monitoring of activities, meaningful public participation and context-specific adaptation, eroding the transformative potential of global governance at the local level (Ahmed et al., 2019; Khan & Ahmad, 2021).

A comparison with Bangladesh, Nepal, Kenya, and Ethiopia suggests that similar obstacles arise in many Global South countries, albeit with different outcomes depending on institutional strength, political commitment, and community participation.

An example is Bangladesh who has gained recognition for mainstreaming adaptation into national development planning via the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). With robust donor partnership and community engagement, in Bangladesh there have been visible results in terms of disaster risk reduction and community based adaptation (Rahman et al, 2015; Huq et al, 2013).

Nepal exemplifies the success of localized adaptation and capitalizes local knowledge systems as well as participatory governance framework to address climatic risks in mountain settings (Shrestha et al., 2012). Such approaches serve as useful precedents for Norther Pakistan which has like topography and GLOF risk but not matching institutional strength.

In Sub-Saharan Africa, countries like Kenya and Ethiopia have mainstreamed climate resilience through national development planning, including Ethiopia's Climate-Resilient Green Economy Strategy. Kenya has intensified its exposure to overseas funding through the creation of climate finance facilities (Kahindi & Rotich, 2014; Alemu & Kidane, 2015).

In contrast, fragile governance, dependence on donors, and lack of consistent political backing in Pakistan impair the scalability of international climate financing. Comparative experience shows that if we are to move from declarations in the global sphere to local impacts, we need effective institutions, good governance, and an open, inclusive style of policy making. Even though the country has a sound policy framework in place, it fails to implement climate actions due to longstanding institutional and financial bottlenecks. Fragmentation at federal, provincial and local levels further results in replication, lack of synergies in efforts and delayed implementation of projects (Iqbal et al., 2020; Chaudhry et al., 2020).

The country also does not possess advanced technical knowledge and project design skills necessary to fulfill the requirements of international climate finance institutions. Furthermore, lack of transparency, potential violations of safeguard policies and corruption risk are also often identified as constraining factors by donor agencies in terms of disbursement (Masud & Khan, 2023).

Technology Transfer– The Holy Grail of global governance: The case of Pakistan Policy in Pakistan is based on the premise of the potential benefits of technology transfer from the developed world to the developing countries. This is taking place amid a technology divide, decreasing the country's potential to upscale lowcarbon technologies and form climate-resilient systems (Dechezleprêtre et al., 2011; Mula, 2025).

Last, but certainly not least, the equity dimensions of global climate governance lack attention. Noor Alie: Rich nations give marginal response to world's carbon burden Pakistan, which accounts for less than 1% of global emissions, is not adequately acknowledged for its exposure in global climate negotiating forums. The equity, global decision making and

resources investment imbalance call for a more just and inclusive climate governance architecture (Roberts & Parks, 2007; Carmona, 2023).

OBJECTIVES OF THE STUDY

1. To assess how global climate governance tools, e.g., the Paris Agreement and UNFCCC, have contributed in developing the domestic climate policies and adaptation responses in Pakistan in the years 2010-2024.
2. To compare the sufficiency and efficiency of global financial and technical support provided through global climate governance tools in increasing the potential of Pakistan in adaptation and reduction in climate change.

METHODOLOGY

Through the qualitative case study approach, this study focuses on how global climate governance architectures, including the UNFCCC and the Paris Agreement, influenced the domestic climate policies of Pakistan in the period between 2010 and 2024. The analysis depends entirely on secondary sources – academic peer-reviewed papers, official documents (like Pakistan's NDCs and national climate policies), multilateral agencies' information (e.g., UNFCCC, IPCC, UNDP), and NGOs/donor agencies' monitoring evaluation reports. The selection of the case study approach, therefore, allowed for a detailed policy oriented analysis, and provided some understanding on how the international commitments are domesticated in the context of local climate actions in the developing world. Through this mode of analysis, the study addresses two main questions: (1) the presence of global agreements in shaping Pakistan's climate policy making and action, and (2) the potential of international financial and technical support to bolster Pakistan's adaptive and mitigation capabilities.

An interpretative thematic analysis framework was used to analyse the data and to identify common themes and issues from the literature and from official reports. Policy influence, climate finance readiness, governance constraints and equity in global support were some of the key themes. Pakistan experience was also viewedthrough the comparative lens, as an added focus to other climate vulnerable developing countries like Bangladesh and Kenya. This articulated the scope for transformation as well as the systemic obstacles of global climate governance that the study sought to assess. This is, however, not a primary data study, as it only draws from existing literature (Aniekwe et al., 2021; Benito-Berlinches and Gumucio, 2021), it may have, for instance, been possible to gather field data to follow argumentation

chains in branches of literature, where travel was not problematic at release date (though COVID-19 pandemic likely blocked such a design related to this particular study at the writing stage), and there may be transparency questions of some climate finance reporting (Bekkers et al., 2021). However, the approach does offer a systematic and holistic understanding of the interplay of the global climate regimes and the national challenges of implementation in Pakistan.

FINDINGS AND DISCUSSION

1. INFLUENCE OF GLOBAL CLIMATE GOVERNANCE ON NATIONAL CLIMATE POLICIES

The shaping of Pakistan's climate policy has been largely influenced by the international climate governance architecture. Its involvement in the UNFCCC and its pledge under the Paris Agreement, have prompted the development of the National Climate Change Policy (2012), the Framework for Implementation (2014) and the Climate Change Act (2017) in line with Pakistan's Nationally Determined Contributions (NDCs) (Government of Pakistan, 2012; UNFCCC, 2015). These manifestos have institutionalized Pakistan's strategy for low-carbon development, sustainable agriculture and disaster risk preparedness (Iqbal et al., 2020).

However, even though policies have been evolving, their implementation continue to face weak institutional foundation and coordination between agencies (Masud & Khan, 2023). For example, the Biennial Update Reports (BURs) under the Paris Agreement have led to greater transparency, but without timely submission and full data sets because of capacity deficits (Shawoo & McDermott, 2020). In addition, policies are created around the constraints of global climate targets, and do not necessary take into account local political system and dynamics making the policies less relevant and acceptable in practice.

2. FINANCIAL AND TECHNICAL SUPPORT: MIXED IMPACT

Pakistan has access to international climate finance, including from the Green Climate Fund (GCF) and the Global Environment Facility (GEF), for renewables and adaptation efforts (Mumtaz et al.,, 2019; Rehman et al., 2024). Priority projects include climate-resilient agriculture initiatives and flood control infrastructure in affected provinces. However, the budget is not fully utilized yet as it suffers from procedural delays, institutional bottlenecks and challenges in proposal development (Masud et al., 2021).

Second, the ability to absorb and disseminate technology transmitted through international channels is limited by lack of skills and infrastructure (Dechezleprêtre et al., 2011). As Mula (2025) emphasizes, Pakistan's weaknesses in the uptake of inexpensive and flexible technologies are attributing to challenges related to intellectual property rights and weak local innovation systems. This curtails the lasting nature of externally supported climate projects.

3. GOVERNANCE AND INSTITUTIONAL CONSTRAINTS

In Pakistan, governance fragmentation and overlapping of authorities among the federal, provincial and local levels hamper climate governance implementation (Chaudhry et al., 2020). Environment, water and energy ministries are not well integrated and have therefore synthesized adaptation strategies. Short term commitments 88 are made and funded as a result of political instability and changing priorities, (Ahmed et al., 2020).

These administrative constraints further reduce the country's capacity to deliver on its reporting commitments to international climate regime, as pointed out by Iqbal et al. (2020). Weak vertical coordination hinders the successful integration of climate adaptation into development sectors including agriculture, health, and education, which are crucial for building long-term resilience.

4. ROLE OF PUBLIC AWARENESS AND COMMUNITY PARTICIPATION

Low awareness by the public and lack of civil society engagement are also found to be major barriers for policy adoption. According to Shah et al. (2019), rural people have alarmingly low climate literacy and environmental knowledge as they are not a part of the school curriculum. As a result, many responses to climate change are ineffective because they are not owned or understood by communities.

The evidence from elsewhere - for example, CBA projects in Bangladesh and Nepal - shows that participatory models can make a dramatic differences to the efficacy and sustainability of climate action (Huq et al., 2013; Shrestha et al., 2012). In Pakistan, pilot projects that build on local knowledge and involve community decision-making have produced encouraging results, particularly with respect to water conservation and flood early warning response, but they continue to suffer from a lack of support and remain insular.

5. EQUITY, EFFECTIVENESS, AND CLIMATE JUSTICE

Pakistan emits less than 1% of global emissions of GHGs, but it is one of the world's most at-risk nations to the adverse effects of climate change (Rasul & Mahmood, 2015), because of

evolutionary and economic conditions. Despite this, access to climate finance and participation in global decision-making is limited. Second, this strengthens the case for climate justice, and for restructuring global climate governance in a manner that reflects differentiated vulnerabilities (Roberts & Parks, 2007; Okereke & Dooley, 2010).

Today's global finance architecture, however, demands tough project design filters, which countries like Pakistan struggle to pass through. This presents a paradox: the nations in dire need of climate finance often struggle to access finance (Saddiqa et al., 2022). The equity critique of global climate governance gains rather than losses relevance in this light.

6. STRATEGIC OPPORTUNITIES AND POLICY INTEGRATION

However, the analysis reflexes some strategic entry points for Pakistan. These include the consolidation of climate finance coordination at a central authority, reinforcing the capacity to prepare and submit competitive project proposals and mainstreaming climate resilience with other development imperatives (Ahmed et al., 2019). Enhancing public–private partnerships and regional cooperation among the countries experiencing similar climate adversities could further support institutional learning and resource access (Rehman et al., 2024).

Finally, embedding climate action within national planning frameworks, especially in agriculture, energy and water, can create systemic resilience. Such an internalize approach is necessary not only for domestic policy coherence but also to fulfill international climate commitments.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

This study argues that global climate governance mechanisms, especially UNFCCC and Paris Agreement, have a strong imprint on the domestic climate regime of Pakistan; however, their efficacy is confined by domestic impediments in policy translation and elemental injustice enshrined in the global governance architecture. The development of policies like the National Climate Change Policy (2012) by Pakistan and its subsequent submission of Nationally Determined Contributions (NDCs) signal an intent to follow global climate ambitions. Nevertheless, structural impediments – including weak institutions, constrained technical

capabilities, and, inadequate intergovernmental coordination, persist in the operationalization of these policies at the national and subnational levels.

Furthermore, though financial and technical support, including through the GCF, the GEF and other mechanisms, has facilitated a number of adaptation and mitigation actions, Pakistan has faced challenges in accessing and effectively deploying these resources, reflecting procedural complexities, governance shortfalls and limited project readiness capacities. Global governance is still highly biased towards structurally advantaged countries, which frequently exclude the interest of the Pakistan and other developing countries in decision-making processes and funding allocations. So although global agreements offer a blueprint for action, their success relies on strengthening domestic institutions and a redistribution of equity at the international climate table.

RECOMMENDATIONS

1. STRENGTHENING INSTITUTIONAL COORDINATION AND CAPACITY

Pakistan has to prioritise the development of a coherent climate governance, with clear mandates for federal, provincial and local institutions. A central national climate authority with technical and financial accountability (and under the direct control of Pakistan's Ministry of Climate Change) would help make implementation and reporting more efficient. It is also important to have capacity development programmes focusing on civil servants, decision makers and local government officials to enhance technical literacy and cross-sectoral integration.

2. ENHANCING ACCESS TO INTERNATIONAL CLIMATE FINANCE

To enhance their access to international resources, Pakistan needs to set up a specialized climate finance facilitation unit that can draft robust and credible proposals inge with the expectations of donors. It should partner closely with development partners and multilateral organizations to safeguard and meet fiduciary standards and promote a transparent and accountable mechanism for fund disbursement. Enforcement of monitoring and evaluation (M&E) systems will add to the confidence of donor and results of the project.

3. PROMOTING COMMUNITY-BASED AND PARTICIPATORY APPROACHES

Adaptation programs to climate should involve local communities in the development, implementation, and evaluation of them. Based on successful regional approaches, like community-based adaptation (CBA) in Bangladesh and Nepal, Pakistan must

institutionalize participatory planning in its climate-affected areas. This will ensure not only contextual but local knowledge system resilience.

4. MAINSTREAMING CLIMATE ACTION INTO DEVELOPMENT PLANNING

Climate change adaptation and mitigation objectives have to be mainstreamed in the country's development policies in areas like agriculture, water, energy, urban development, and education. It demands that all major infrastructure and development projects be subject to obligatory climate risk assessments, and that climate-resilient budgeting be practiced by the federal and provincial governments.

5. ADVOCATING FOR EQUITY IN GLOBAL CLIMATE GOVERNANCE

Pakistan in international climate negotiations needs to take a more robust diplomatic stance in promoting greater equity in global governance. This includes mobilizing for more and realistic representation in decision making organs; easy access to finance for the most vulnerable countries; and clear transfer of technology. Joining other Global South countries, these can boost these efforts and make Pakistan a force to reckon with in climate diplomacy.

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