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GLOBAL CHALLENGE AND NATIONAL RESPONSE: AN APPRAISAL OF PAKISTAN'S CLIMATE CHANGE POLICY RESPONSES

[1]Dr. Zahid Ullah
[2]Sheraz Khan
[3]Hazrat Umar
[1]Lecturer in Political Science at Abdul Wali Khan University Mardan, Khyber-Pakhtunkhwa, Pakistan
[2]M.Phil. Scholar, Department of Political Science, Abdul Wali Khan University Mardan, Khyber-Pakhtunkhwa.
[3]Graduate, Department of International Relations, Abdul Wali Khan University. Internships done at the National Institute of Public Policy (NIPP) and the Centre for Security, Strategy and Policy Research (CSSPR
[1]zahid.ullah@awkum.edu.pk, [2]sherazkhan98655@gmail.com, [3]hazratumar314@gmail.com

Abstract

It is a settled fact tat the globe is getting warmer. According to the United Nations, the world is 1.42 degrees warmer than it was in the 19th century—prior to industrialisation. Pakistan has become the "epicentre" of global climate-induced changes and challenges. Climate change disproportionately affects the country in ecological, economical, and social terms. Global warming has become "an existential threat" to the country. This article critically evaluates the climate change policies of Pakistan in the framework of the global climate commitments and national vulnerabilities (floods, heat waves, water shortages, and food insecurity). It also analyses how well the policies in Pakistan fit in with the available international protocols, i.e., the Paris Agreement, etc. A thorough analysis of the literature—related to key national climate policies, strategies and institutional mechanisms—is carried out in the article. The results show that despite the increasing internal policy sophistication and international commitment shown by Pakistan, there are still critical gaps in the implementation of policies, inter-agency coordination, and resource distribution. This article argues that climate change poses a serious threat to Pakistan, and the situation is made worse by ineffective climate governance, weak institutional capacity, limited financial and technical resources, and political uncertainty. The key to improving the climate resilience of Pakistan and its environmental sustainability lies in buttressing institutional frameworks, improving inter-agency coordination, and the availability of resources—both financial and technical—for projects that deal with climate change.

Keywords: Climate change, global response, protocols, Pakistan, policy responses

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Corresponding Authors*

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Introduction

Climate change is the most urgent, complex and comprehensive problem that humanity has to deal with in the modern world. In reality, it is a crisis that has hit practically every sector, such as nations, governments, economies, agriculture, healthcare, water resources, food security, and energy, literally, in every aspect of human life (Mohan, Kumari, and Kaushik, 2024). What was previously perceived as an environmental or scientific issue has now been a deep human, ethical, economic, and political problem, whose magnitude is only expanding with each passing day (Incropera, 2015). The effects of the changes as the humanity approached 2025 increased at an alarming pace. Countries like the United States, Spain, Saudi Arabia, India, and Pakistan experienced record high temperatures of over 50 0 C in summer, never recorded before (Appleby, 2025). Thousands of people were affected by these extreme heat waves, crops were destroyed, water shortages were critical and devastating wildfires were triggered. Climate change is no more a farfetched reality; it is a reality that cannot be ignored and avoided anymore (Mustafa, 2007).

The international community, in particular, Intergovernmental Panel on Climate Change (IPCC), has persistently issued warning that the world is prone to warming by 2.5 to 3.5C by the end of the century unless greenhouse gas emissions are drastically cut (Change, 2007). This increase would be disastrous: rising levels of the sea, melting of glaciers, more frequent and severe storms, floods, droughts, and a considerable decrease in the world agricultural productivity. These are no longer hypothetical risks they are happening in real time (Schwartz and Randall, 2003). Internationally, other forums, such as the United Nations Climate Change Conferences (COP), have been a valuable venue to debate and make commitments. Many promises were given in COP29 in 2024 (Azerbaijan) and the speed of progress is agonizingly slow. Developed nations, which have contributed most of the emissions built over the years, should not only lower theirs but also offer the relevant financial, technical, and administrative aid to the developing countries such as Pakistan to enable them to manage this common disaster.

The country of Pakistan is one of the ten most climate-sensitive countries whereas the country produces less than one percent of the total greenhouse gas emissions in the world (Arshed, Saeed, Salem, Hanif, and Abbas, 2024). The destruction of the disastrous 2022 floods is yet to be resolved, and in 2025, the nation is experiencing once again the extreme heat waves, unpredictable rainfall patterns, and a new water crisis. The water levels in major reservoirs such as Tarbela and Mangla have reduced to extremely low levels. The farming in areas like Sindh and South Punjab is experiencing a lot of pressure and cities are struggling with the chronic water scarcity.

The government has initiated a number of good policies on the policy front. Such programs as the Ten Billion Tree Tsunami, Clean and Green Pakistan, the National Electric Vehicle Policy, and the recently established Climate Action Bill 2025 are significant strides in the right direction (Mako, Nabi, Mahmood, and Khan, 2022, May). These will be done in order to reduce emission of carbon, enhance urban green areas and to ensure sustainability. Under its submissions as part of the Nationally Determined Contributions (NDCs), there were also the promises of Pakistan to cut down on its emissions by 50 percent by 2030 (Wazir, Khan, Mahsud, Ahmed, Wazir, and Islam, 2024).

Nevertheless, these efforts have been met with a lot of challenges which include lack of sufficient funds, ineffective implementation framework, inconsistency in policies and lack of awareness among people. It will not be enough to make speeches and announcements. A

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concerted long-term program that includes action on the grassroots level is needed to address the climate crisis.

Climate change is not only an environmental or a scientific concern, but it is a wake-up call screaming at the future of human race (Risbey, 2008). Unless international community can put some practical strategies, some consistent policies and create a sense of awareness in a large-scale manner, the future generations will not regard us as progressive minded but as irresponsible and narcissistic. It is high time to take action. The international Community should strive to come up with a future that is not only habitable but also sustainable, resilient, and just to us, as well as to the generations to come.

Global Warming: A Brief Historical Overview

Towards the end of the 19th century, the world came to realize that changes in the concentration of greenhouse gases (GHGs) in the atmosphere may affect global climates (Schneider, 1989). Since the Industrial Revolution, and, in particular, since the middle of the last century, human activity has had a considerable influence on the volume of GHGs such as CO_2, methane, nitrous oxides, and chlorofluorocarbons, not to mention that it has reduced the albedo of the Earth, or its reflection capabilities (Cronan, 2023). Climate is defined as the weather patterns over a long period of time in terms of temperature, rainfall and occurrences of storms. Climate change today is not only a change in these long-term patterns, but also more extreme variations with the increased occurrence of extreme weather events. The climate of the Earth has never been constant; however, the rate and the scale of change are so high and rapid that it may surpass our ability to adapt, and the climate and ecosystems may find themselves in very unstable conditions (Turner et al., 2020).

As of 2017, the average worldwide temperature was 1 0 C higher than it was in preindustrial times, owing to growing GHG emissions and the alteration of surface reflectivity on the Earth. To limit the total warming to less than 2 0 C is already a challenge, and to achieve an even more strenuous goal of 1.5 0 C, which is necessary to avoid severe economic, health, and environmental harm, is becoming more and more difficult. The Intergovernmental Panel on Climate Change (IPCC) estimates that it will be necessary to have rapid and far-reaching energy, land use, urban and infrastructural, and industrial system changes in order to achieve pathways to limit global warming to 1.5 0 C with no or minimal overshoot. These are the transitional phases like no other except that they may be at a faster rate.

Climate change is equally leading to acidification of the ocean, rise in sea level, and changes in other climate aspects other than temperature (Mimura, 2013). These are coupled with other significant environmental shifts on the planet, including the loss of biodiversity, biogeochemical cycles, the widespread distribution of toxic chemicals and materials that harm ecosystems and the essential services that humanity relies on (Shukla et al., 2021). Using such massive scales of these transformations, and presumably visible on the geological record in millions of years, has prompted proposals to identify the present period as the Anthropocene. Global environmental changes (GECs) and the manner in which we react to them are likely to have far-reaching impacts on human societies whether in the local or global society.

Climate change practices in Pakistan are shaped by the international agreements that the country has signed such as the Paris Agreement, and national policies such as the National Climate Change Policy (NCCP) and the Climate change Act of 2017 (Ahmed and Zafar, 2023). Nevertheless, such attempts are not sufficient to narrow the gap that exists between policy implementation. Political unrest, insufficiency of technological advancement, and low level of publicity complicate this gap (Shah et al., 2024). Since Pakistan is largely an agricultural nation,

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the country is particularly susceptible to climate change, and landmark and timely policy responses are needed to establish a strong and robust system.

This article critically analyses the policy of climate change in Pakistan and sheds light on how this country has acted regarding the environmental challenge. It also discusses the way the climate strategy of Pakistan has been influenced by governance, financing systems and international collaboration. By determining the effectiveness of the environmental policies in Pakistan to deal with climate change, the research will identify the gaps and recommend measures towards the realization of a more active climate policy.

Pakistan's Climate Change Policy Response: A Review of Literature

The climate change policies of Pakistan have been taking a slightly different route over the years, and this can be attributed to the tendency to create a more sustainable future of the environment (Ahmed, Tan, Shaikh, Waqas, Kanasro, Ali, and Solangi, 2020). One of the milestones was reached when climate adaptation and mitigation activities were incorporated into the National Climate Change Policy (NCCP) of 2012. Still, policymakers are affected by the issue of governance and insufficiency of financial resources (Khan, 2025). Even though the existence of a complicated structure implies the progressive strategy, the efficiency of these policies cannot be ensured. Their effect is often ineffective because of weak institutional coordination and intermittent implementation of policies. The 2021 revision of the climate change policy was supposed to focus on making the policies stricter and more focused on adaptation, yet experts point out that despite the fact that the policies are guiding, they are not legally obligatory, which implies that the governments should not adhere to them (Hussain, 2024). The wrong distribution of funds is one of the greatest obstacles to a successful implementation since it does not allow policymakers to attain the desired objectives. The policies of Pakistan are underperforming compared to those of other countries. The policies of the climate in Pakistan are frequently perceived as less robust and in dire need of change when compared to the neighboring nations, such as Bangladesh and India, where these countries are likewise in the same socio-economic status (Masud & Khan, 2023). This highlights the need of the nation to calibrate the policies that it has with those of the best practice in the world and to be more realistic. Climate change policies have various challenges in their implementation in Pakistan, the main ones being the problem of bureaucratic inefficiency. Institutional fragmentation is one of the central problems since various ministries are duplicated in their duties without coordination (Saeed & Piracha, 2021). Such fragmentation will create project delays and resource mismanagement. The biggest challenge to developing climate change efforts is continued to be financial constraints. Climate initiatives in Pakistan are highly reliant on foreign aid, and it is the administration that delays the establishment of these funds (Tanvir and Mukhtar, 2022).

The inability of the government to generate domestic financial resources makes the situation even worse and climate resilience projects are underfunded and poorly implemented. Furthermore, the climate policy lacks awareness and participation of the public. Long-term sustainability can hardly be attained without the involvement of the community. The success in countries with the introduction of the public-private partnership in climate governance has been more noticeable, which is why Pakistan should engage more stakeholders in the process (Ullah and Ali, 2023). There are also high national security risks in relation to climate change in Pakistan. Studies indicate that environmental degradation has contributed to the cause of resource-based conflicts, in particular, in water strapped areas such as Balochistan (Khan and Khalid, 2016). Inter provincial rivalries on the utilization of water resources have aggravated scarcity and weakened political stability.

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Pakistan's Climate Policy Frameworks: An Assessment

As the assessment of the climate policy framework of Pakistan has shown, the policy intentions of this country are compromised by the large loopholes in the implementation, which is a multi-faceted problem. Although integrated interventions such as the National Climate Change Policy (NCCP), and the Climate Change Act have been established, the implementation of these policies remains wanting because of lacking institutional coordination, financial resources and no involvement of the people. This discussion is based on a combination of the literature review, the research objectives, and data analysis aimed at creating a picture of the present situation with climate policy in Pakistan and provide the recommendations that can be implemented in practice. A common theme in numerous studies has been that there has always been a gap between policy formulation and its practical implementation in climate policies in Pakistan.

The results of the study underline the necessity to deal with the matters at different levels of the policy-making process. It particularly indicates that measuring the success or failure of a policy must not be limited to post-policy analysis. This article has indicated that barriers that affect implementation of policies are usually rooted in the initial phases of the policy planning and these challenges may be transferred to the lower management of implementation. A more specific analysis of the results will be provided in the next section, with the emphasis placed on major needs of successful policy implementation in the climate change adaptation.

Good leadership is often regarded as a key to long-term climate change action (Masud & Khan, 2024). In addition to having good leadership, the level of trust in the leadership is essential in ensuring successful adoption of the policies at the local level. This was an eye opener that build-trust and common understanding among the various stake holder groups were not formed as a result of a poor consultation process to develop the policy. The lack of collaborative action in the policy in Pakistan has also been contributed by a long history of mistrust between politicians and civil entities in the past (Stephens, 2020). This, however, is unlike the world discussions on climate governance in which incorporation of social norms and values towards the desirable adaptation consequences of climate change are highly accepted (Persson, 2019). According to the research conducted in nine countries, Climate Investment Fund (Masud, & Khan, 2024), obtained the five steps in a continuum of participation in a process of policy formulation and implementation, such as information sharing, policy dialogue, formal consultation, programmatic collaboration, and institutional partnership. The partnership building which is the ingredient of a successful process of policy implementation in a way, undermines the relationship of mis-trust between the two stakeholder groups of FRG and PPIs, and the ineffective involvement of other stakeholders in the policy implementation process in Pakistan.

The meaningful climate change action is very much dependent on sound leadership and trust especially in the grassroot level so that the policies can be well accepted. This paper indicates that the absence of trust and lack of consultation in the policy formulation process in Pakistan had impeded working together among stakeholders. Mistrust between federal agencies and civil society: The history of mistrust between these two entities further hindered efforts by the two in working together (Ali, 2006). This is opposed to global climate governance where it is deemed to be of paramount importance that social values are incorporated, as a necessary prerequisite to positive adaptation results (IPCC, 2014; UNFCCC, 2015). According to the Climate Investment Fund (2020), policy participation comprises key stages, yet in Pakistan,

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unsuccessful participation did not allow building partnerships, which is critical to the success of the policy.

To be able to sell policies to the local communities, the policy-makers need to bear in mind the factors that affect the grassroots support as the impact of climate change is experienced most at the grassroots level (Samaddar, Oteng-Ababio, Dayour, Ayaribila, Obeng, Ziem, & Yokomatsu, 2021). In Pakistan, a top-down strategy constrained the involvement of stakeholders and viewed adaptation as a technical concern without paying attention to social knowledge (Khan, 2025). This is a reflection of the criticism by Elmore on forward mapping, in which he saw no effect. Pakistan is not the only country with issues of excluding grassroots stakeholders in the policies formulation process, and this problem can be observed in Uganda and Tanzania (Ampaire, et al., 2016). To adapt successfully, it means more flexibility, local knowledge and inclusive and multi-scale governance.

Whereas the coping policy tools such as Cap and Trade or emission taxes have been widely researched (Cook, 2010; Macintosh et al., 2015), the research on the structure of the climate change policy document and its effects on the implementation are scarce. The policy document addressing the issue of climate change must be focused on climate change and not on development matters, include mitigation and adaptation measures, and define the short- and long-term benefits, and encourage cross-sectoral integration (Bak et al., 2017; OECD, 2007). Nevertheless, the National Policy of Climate Change Pakistan (NCCP) does not cover these aspects, which become the sources of difficulties in its implementation. The transverse nature of climate change necessitates cross-sectoral integration but policies in South Asia, Pakistan included, tend to be rather ill-coordinated and do not have a way of connecting with the established sectoral frameworks (Vij et al., 2017). The same problem is evident in other developing nations including Uganda and Nepal, where there is lack of clarity of responsibilities, funds and definite accountability systems and hence they are not implemented effectively. These barriers could be identified and overcome by undertaking early review of policy documents against agreed standards.

Decentralization is regarded as a means of empowering the local institutions to deal with the issues of climate change based on their circumstances. Nevertheless, the framework of climate change policy that is under the control of federally governed Pakistan does not gel well with the models of decentralized governance in place, and thus, implementation becomes problematic. This has been noted in other nations including Australia where in spite of a multi-level structure of governance, intricate climate adaptation policies are crippled by a top-down, sectoral style and absence of mechanisms to deal with cross-sectoral and multi-level relations.

National Climate Change Policy (NCCP) of Pakistan has a governance model that retains the authority to make decisions and to spend money at the federal level, and the implementation to be done at the sub-national levels and at local levels. This will result into a discrepancy between the centralized control and decentralized implementation, and a threat of non-compliance. As an illustration, the federal council with the Prime Minister in the helm of NCCP implementation could perform excellently with a powerful leadership. But this kind of structure is considered weak: once the government changes, there also occurs a shift in priorities. Even on a grassroots level, ignorance and technical capacity further contribute to the challenge of policies on climate change in Pakistan. It is even harder to narrow these knowledge gaps due to the lack of a clear definition of a local governance system. The policies that are formulated by the central government decision-making process turn out to be less

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adaptable and do not connect different tiers of authority decreasing their overall efficiency (National Research Council, 2011).

The existing climate change governance structure in Pakistan indicates the element of path dependency whereby the policy procedure has maintained the same tracks as in the past with decentralization, thus resulting to a lack of connection between the federal and the local levels (Howlett, 2009). The same problem can be observed in such countries as Uganda, Zambia, and Nepal where decentralization resulted in poor integration between the central and local government (Christopolos et al., 2016). The experiences of such countries as Australia indicate that climate change adaptation needs to be done on a coordinated basis at all the levels of governance (Termeer et al., 2010). In order to improve the climate policy in Pakistan, the decentralized system must be acknowledged, the coordination between the federal and local actors is to be improved and the structures that will enable the successful national to local policy scaling is necessary.

Conclusion

Climate change impacts Pakistan ecologically, economically, and socially. There is evidence that points to a 0.18°C increase in temperature—especially in the monsoon regions of Pakistan—since 2010. It is also a scientifically proven fact that for every 1-degree increase in temperature, the water-holding capacity of the atmosphere grows by 7%. According to an estimate, the water-holding capacity of the atmosphere sees a dramatic uptick during heatwaves when the temperature goes up by eight degrees Celsius in some parts of Pakistan, which results in devastating floods (Sheikh, 2025) . That is why heavy downpours and continual flooding wreak havoc in Pakistan from time to time—disrupting the social and economic life of the country. Pakistan asks the international community for help in such situations, which points to the ill-preparedness of the state for climate-induced calamities.

This article has established a number of essential impediments to effective mitigation and adaptation to climate change in Pakistan especially as far as policy formulation and execution are concerned. The issue of the ongoing top-down management style that has seen misunderstandings and confusion on the National Climate Change Policy (NCCP) is a major challenge. This is aligned to the results of the other developed nations such as Australia, where there is poor coordination between various layers and various sectors in governance and has thus held back development. The paper highlights the roles of the complexity of the interactions between different governance levels and sectors as crucial to achieving successful policy implementation.

One of the key obstacles noted is that key stakeholder groups are not consulted during the policy development process. It has led to the variation in exploring the policy and the framework in which the policy can be operated, which has increased distrust between governing bodies. The study highlights that effective community engagement is vital in achieving trust and positive policy delivery particularly at grassroots level. The other important discovery is the disintegrated administrative framework in Pakistan which still runs on the path-dependent model. Although there is some decentralization that has been carried out under the 18th Amendment, there is still a lack of effective integration between the national, sub-national and local governance that creates loopholes in coordination and policy implementation. The research demands the change in the use of old and strict governance frameworks and promotes the use of more flexible models to combat the menace of climate change.

The problem of inclusivity, lack of coordination and lack of specifics of the implementation process are not peculiar to Pakistan. Many developing countries encounter these challenges

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thus growing to highlight the significance of the issue worldwide. In order to overcome these obstructions more researches should be conducted to analyze and modify governance systems that would facilitate effective climate change policies by the economically disadvantaged nations. This will prove important in making sure that these countries can easily adjust to the quickly changing climate and become sustainably viable in the long term.

Policy Recommendations

1. **Urgent Need for Action on Freshwater Depletion and Environmental Degradation**

Pakistan is facing critical challenges related to environmental degradation, and by 2025, the country's freshwater resources may be severely depleted. Immediate and effective action is needed to safeguard these resources and prevent further environmental damage.

2. **Strengthening and Updating National Policies for Environmental Protection**

There is a need to actively implement existing national environmental policies while also crafting more effective, new policies. Numerous renowned international organizations, such as the United Nations Environment Programme (UNEP), Greenpeace, Earthjustice, Carbon180, and Climate Partnership, are available to assist Pakistan in tackling climate change. National policies must be designed to effectively address and manage environmental issues with the support of these organizations.

3. **Addressing the Gaps in the Climate Change Policy 2021**

Despite the existence of the Climate Change Policy 2021, Pakistan continues to face criticism for its lack of implementation. The country suffers from weak accountability mechanisms. To address this issue, it is crucial to empower provincial governments through the 18th Constitutional Amendment, allowing for greater self-sufficiency in executing climate policies at the local level.

4. **Strengthening Climate Governance with Clear Accountability**

Effective climate governance requires transparent and enforceable accountability systems. Institutions responsible for climate action should have the authority to take decisive actions against non-compliance and internal mismanagement. The implementation of decentralization through the 18th Amendment, along with the empowerment of local bodies, can enhance the responsiveness and effectiveness of climate policies.

5. **Boosting Youth Representation, Public Awareness, and Legal Action for Climate Change**

Increasing the participation of young people, raising public awareness about climate change, and fostering a culture of civic responsibility and legal accountability are essential for improving the enforcement of climate policies and building climate resilience. Encouraging active public engagement and legal advocacy can strengthen the fight against climate change at all levels of society.

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