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Implementing Sustainable Development Goals into Operational Policies: A Case Study of Khyber Pakhtunkhwa, Pakistan

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Abstract

This research aims to investigate how Sustainable Development Goals (SDGs) implementation into operational policies in Khyber Pakhtunkhwa (KP) of Pakistan can address climate-related challenges that are deforestation, water scarcity, and extreme weather conditions. Drawing on the Earth System Governance (ESG) framework, the research focuses on how governance structures and policies of KP comply with SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 7 (Affordable and Clean Energy). A qualitative methodology using academic literature from 2020 to 2024, policy reviews, and secondary data are used. We present results showing that important gaps exist in interdepartmental coordination, the prioritization of resources, and stakeholder participation during the localization of the SDGs. The ESG framework identifies adaptive governance and participatory approaches as necessary to deal with these barriers. The study offers the following recommendations: Project output includes a provincial SDG strategy, increased stakeholder collaboration, and resource appropriation.

Keywords: Sustainable Development Goals, Climate Action, Earth System Governance Framework, Khyber Pakhtunkhwa, Policy Integration, Climate Resilience, SDG Localization

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Title

Reassessing The Impacts of Economic Globalization on Agriculture and Manufacturing Sectors of Pakistan's Economy

Abstract

This research aims to investigate how Sustainable Development Goals (SDGs) implementation into operational policies in Khyber Pakhtunkhwa (KP) of Pakistan can address climate-related challenges that are deforestation, water scarcity, and extreme weather conditions. Drawing on the Earth System Governance (ESG) framework, the research focuses on how governance structures and policies of KP comply with SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 7 (Affordable and Clean Energy). A qualitative methodology using academic literature from 2020 to 2024, policy reviews, and secondary data are used. We present results showing that important gaps exist in interdepartmental coordination, the prioritization of resources, and stakeholder participation during the localization of the SDGs. The ESG framework identifies adaptive governance and participatory approaches as necessary to deal with these barriers. The study offers the following recommendations: Project output includes a provincial SDG strategy, increased stakeholder collaboration, and resource appropriation.

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Contents

Introduction

The Sustainable Development Goals (SDGs) provide a global framework for approaches to difficult problems such as climate change, poverty, inequality, and environmental degradation. Reaching sustainable development in areas affected by environmental problems, such as achieving SDG 13 (Climate action), SDG 6 (Clean water and sanitation), and SDG 7 (Affordable and clean energy), is related to climate-related goals.

Khyber Pakhtunkhwa (KP), Pakistan has unique climate-related challenges because of its geographical location as well as socio-economic conditions. The highly vulnerable situations in the province include deforestation, glacial melting, flooding, and extreme weather events that can jeopardize livelihoods and biodiversity (Environmental Protection Agency Khyber Pakhtunkhwa, 2022). Although KP has demonstrated significant progress in cutting carbon gas emissions, the localization process or the SDG to operational policy to achieve the climate-related goals has been slow. The progress is hindered due to a lack of adaptive governance, non-coordination between respective departments, and lack of resource allocation (Environmental Protection Agency Khyber Pakhtunkhwa, 2022). This study uses the Earth System Governance (ESG) Framework to analyze the integration of climate-related SDGs in KP's policies. Climate resilience is reliant upon governance structures, policy adaptability, and stakeholder participation in decision-making (Earth System Governance Project 2018), hence the ESG framework provided a useful prism through which to gain a clear view of them.

However, Khyber Pakhtunkhwa has to deal with crucial policy implementation in climate-related SDGs. However, power sector policy frameworks exist, but implementation is often limited, funding is non-existent, and stakeholder engagement is weak. However, there is a lack of a cohesive strategy on how to integrate SDGs to address climate vulnerabilities at the local scale. In order to set effective strategies to promote sustainable development it is important to understand the governance structures and barriers (Environmental Protection Agency Khyber Pakhtunkhwa, 2022). The research aims to explore the following questions:

1. To what extent are the climate-related SDGs (SDG 13, SDG 6, and SDG 7) integrated with the operational policies of the disposed Khyber Pakhtunkhwa?
2. Which governance structures and mechanisms enable or constrain the localization of climate-related SDGs in KP?
3. What particular challenges thwart the effective implementation of climate-related SDGs in KP?
4. How the Earth System Governance framework can be used to guide improvements to SDG integration into KP's policies.

This research is important in that it links global SDG frameworks to local governance in highly climate-risky regions. This study applies the Earth System Governance framework to contribute to the academic debate around adaptive governance and sustainable development. These findings are expected to offer policymakers, researchers, and practitioners working to localize SDGs in KP and other contexts some useful insight (Earth System Governance Project, 2018).

Literature Review

Global Perspectives on Climate-Related SDGs

The emergence of Sustainable Development Goals (SDGs) into global governance systems for climate resilience and sustainable development has been the focus of discussion. Climate-related SDGs (SDG 13 [Climate Action], 6 [Clean Water and Sanitation], and 7 [Affordable and Clean Energy]) are considered foundational for the creation of synergies across other development goals (Sachs et al., 2020; Chancel et al., 2022). Moreover, these goals are connected to broader sustainability outcomes (such as poverty alleviation, SDG 1, food security, SDG 2, and sustainable urbanization, SDG 11) that demonstrate their importance to global work in tackling systemic climate challenges.

A corollary existing in the international literature is the requirement of policy coherence for enhanced implementation of the SDGs. Aligning policies across sectors and levels of government not only avoids duplication but also, they argue, guarantees sustainable outcomes. According to the United Nations (2022), policy incoherence is a substantial impediment, mainly in developing areas with slim institutional capacities. In both cases, cross-sectoral collaboration and stakeholder engagement are therefore crucial to filling governance gaps and boosting SDG localization (Le Blanc et al., 2015). For instance, Rwanda and Costa Rica have both undertaken integrated policy approaches that connect national development strategies with SDG targets, as a means for governments to incentivize coherent system governance.

But then there is a counter-narrative, that the globalized SDG framework is too rigid and insufficient to articulate the specific socio-economic and ecological conditions of targeted vulnerable regions. Hickel (2019) maintains that the one-size-fits-all strategy of implementing SDG is fundamentally flawed because it does not take into account levels of resource distribution, governance capabilities, and historical responsibilities in terms of climate change. Nevertheless, in the context of the Global South, this critique is particularly important, where constraining economic conditions and weak institutional frameworks intensify the challenges to achieving climate objectives. In this respect, the Earth System Governance (ESG) framework is suitable to highlight the need for governance systems that are capable of addressing these local challenges, and that are adaptive, participatory, and equitable (Biermann, 2014).

To address these critiques adaptive governance frameworks are proffered as a means of engendering resilience in climate-vulnerable regions. The ability to respond to these changing environmental issues supports the idea of adaptive governance which Cooper, S. J., & Wheeler, T. (2015) promote. Consequently, this approach maps perfectly onto the flexibility and agentive practice-based framework of ESG and the potential to provide actionable insight to improve SDG localization in diverse governance contexts.

Climate Challenges and SDGs in Khyber Pakhtunkhwa

Given its significant climate vulnerabilities, Pakistan is required as well as faced with the challenge of integrating Sustainable Development Goals (SDGs) into its national and regional policies. Glacial melting, water scarcity, extreme weather events, and biodiversity loss are expressions of climate change in Pakistan that have profound implications for socio-economic development and human security (Sultan et al., 2022). Rising temperatures in the Himalayan region, which critical water source for Pakistan, are particularly susceptible to glacial retreat and a growing risk of flooding and water shortages (Sultan et al., 2022). The governance weakness, resource constraints, and socio-economic disparities exacerbate these issues making the achievement of climate-related SDGs (specifically SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy)) problematic.

Being a mountainous province and having a record of deforestation, socio-economic vulnerabilities are important reasons that make the province of Khyber Pakhtunkhwa (KP) more vulnerable to the impacts of climate change. It has been found that illegal logging and land use changes in KP, brought about deforestation which exacerbated climate risks like soil erosion, flooding, and biodiversity loss (Haq, 2024). However, in most cases, the effectiveness of national strategies—the Pakistan Climate Change Policy 2021 being an example—is hampered by an inconsistent application and lack of organized interdepartmental coordination to implement policies and actions. Moreover, the allocation of resources at the subnational level is riddled with gaps, while monitoring and evaluation frameworks are not robust enough to support the localization of SDGs in KP.

Yet, despite such challenges, localized governance initiatives in KP point to an instructive way forward on how to address climate-related problems. For example, the Billion Tree Tsunami initiative is recognized globally as a good example of an afforestation program contributing to reforestation as well as improving climate resilience at a local scale (Haq, 2024). In the program, local communities were engaged in planting trees and offered a model for participatory governance that matches the formulations amenable to change and nuances of the Earth System Governance (ESG) framework (Cooper et al., 2015). However, scholars highlight that such efforts do not normally work in silos and lack integration within SDG frameworks, contributing to their lack of scalability and long-term impact.

But it's also a strong reminder that SDG 6 (Clean Water and Sanitation) must be achieved as well. Inefficient water management and inefficient irrigation systems with inadequate investment in water infrastructure exacerbate water scarcity, according to research by Sultan, et al. (2022) and UNDP (2022). Here, water resources are also burdened by glacial melting and erratic rainfall, and subsequently, the burden gets aggravated leading to a disproportionate impact on agriculture and rural livelihoods. In addition to technical solutions, policymakers also pointed to the need for policy coherence and institutional reform to deal with these challenges.

On SDG 7 (Affordable and clean energy) government has been working for that in the past. Despite this, the country continues steadily to promote the use of renewable energy sources, such as solar or wind power, but this trend is far from even and in many cases is hindered by governance as well as a lack of funds. Despite bureaucratic inefficiencies that have hindered its planning, and relatively less strategic planning, KP has a large potential for hydropower development that remains largely untapped. Scholars, however, indicate that by learning from international collaborations and investments in renewable energy infrastructure, KP can meet its energy challenges as it works towards securing climate resilience.

The two largest barriers to SDG implementation in Pakistan are weak institutional capacity and coordination at the interdepartmental level, on a critical level. The combination of overlapping mandates of government agencies and poor stakeholders' participation leads to poorly integrated policies and ineffective use of resources paid (UNDP, 2022). The worst hit is KP in which structures of governance are often straight-jacketed by a lack of financial and human resources. To overcome these barriers, the governance architecture needs to be improved, and multi-stakeholder collaboration has to be promoted (Biermann, 2014).

Governance Structures for SDG Localization

Establishing effective governance structures in a climate-vulnerable area such as Khyber Pakhtunkhwa

(KP) is critically important for the sustainability of the local SDGs approach. With regard to SDG-related priorities, research is directed toward the requirement for decentralization as well as the development of adaptive governance frameworks to synchronize provincial governance systems (Arfanuzzaman & Dahiya, 2019). Typically, existing governance mechanisms have limited capacity, fragmented coordination, and insufficient funding that hinder the integration of climate-related SDGs. In other words, these structural weaknesses hinder translating policy to implementable policy, further complicating approaches to climate action in the region.

The literature identifies another important governance dimension: policy architecture (i.e. the structural design of governance systems) and the coherence of institutional frameworks (Biermann, 2014). The Khyber Pakhtunkhwa Climate Change Policy 2022 influences provincial climate-related governance in KP. However, there is no matching between provincial and national strategies and therefore gaps in policy implementation. For example, KP's policies include afforestation and the promotion of renewable energy development but the integration of these policies with broader national SDG frameworks is wanting (UNDP, 2022). Therefore, in order to fill these gaps, scholars argue, institutional reforms aimed at improving vertical and horizontal coordination within government agencies are needed (Le Blanc et al., 2015).

Against that, the adaptive governance frameworks provide a flexible approach to deal with the dynamism of climate challenges. Iterative decision-making, stakeholder engagement, and institutional learning are emphasized by adaptive governance, which allows for governance systems to adapt to changing conditions (Cooper et al. 2015). KP can strengthen institutional capacity and facilitate collaboration among diverse stakeholders, such as government agencies, NGOs, and local communities, using adaptive governance, say scholars. To illustrate, KP's collaborative governance mechanisms appear to have proved effective, as seen by integration into its Billion Tree Tsunami initiative which is successful. Critics argue, however, that many such initiatives have insufficient long-term sustainability as they are inadequately integrated into a broader SDG framework and resource resource-constrained.

Second, a lack of accountability mechanisms and mechanisms in KP undermines the legitimacy and effectiveness of SDG implementation within KP. According to research weak monitoring and evaluation systems fail to enable stakeholders to follow progress and make institutions accountable (UNESCAP, 2024). In KP, we lack appropriate data collection and reporting frameworks to increase transparency and the ability to track progress toward SDG 13 (climate action) and related objectives. To solve these problems, scholars suggest that digital technologies, e.g. Geographic Information Systems (GIS), be used to monitor and assess change to SDG achievement.

Policy Coherence and Integration

The internationally recognized and key factor for the successful implementation of Sustainable Development Goals (SDGs) is policy coherence. Alignment of policies at the sector and governance level is guaranteed; thus, tradeoffs are minimized and synergies promoted (Zeigermann, 2019). Without a coherent policy framework, efforts to attain climate-related SDGs such as SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation) and SDG 7 (Affordable and Clean Energy) will be fragmented and inefficient (Le Blanc et al., 2015). In cases like Pakistan, according to UNDP (2022), where the governance system is usually resource-constrained and fragmented institutions, the challenge of achieving policy coherence is pronounced.

Overlapping mandates and the lack of coordination between federal and federal governments to such an extent become responsible for the weakness of policy coherence in Pakistan. For instance, the implementation of strategies for example national SDG strategies lies in the hands of the federal government, while the provinces are responsible for implementation for example. This often creates policy execution gaps between the provincial policies and the national plans and/or international frameworks. The climate resilience policies of Khyber Pakhtunkhwa (KP) pay attention to provincial issues but fall short of linking to the overall SDG agenda. For example, KP's billion tree tsunami program, highlighted for its environmental value, remains separated from national climate change adaptation policies and from policies on sustainability in energy supply.

Case studies are used comparatively to offer lessons about how policy coherence can help SDG implementation. For example, through the coordination amongst government agencies and on a cross-sectorial level, the SDG targets have been synchronized in the national development plans of Bangladesh. The Ethiopian Climate Resilient Green Economy (CRGE) strategy is also similar, showing how environmental goals and economic development decisions can be combined to get sustainable results (Zeigermann, 2019). The examples suggest that institutional mechanisms for collaboration and policy alignment matter. KP could use similar mechanisms in dealing with policy fragmentation and closing the gap in localizing SDGs.

Furthermore, policy coherence can be achieved through multi-stakeholder engagement according to the literature. SDG localization influences a wide range of stakeholders, including government agencies, non-governmental organizations (NGOs), private sector actors, and communities who provide inputs to achieve it (UNESCAP, 2024). Stakeholder engagement in KP is however very low and women and rural communities are generally not part of decision-making. This exclusion, beyond the denunciation of the legitimacy of climate policies, restricts the implementation of policies that do not recognize the real needs and priorities of the populations concerned. As such, it can prove a key tool in achieving policy coherence when expanding stakeholder engagement so that climate-related SDGs are effectively localized.

However, poor robust M & E frameworks are yet another critical barrier to policy coherence in KP. With weak M&E systems, the ability to track progress, identify gaps, and, thus, revise policies to meet the results anticipated is denied (UNDP, 2022). For example, although there are examples of climate resilience initiatives undertaken by KP, such initiatives have failed to be scaled up because of the absence of data-driven mechanisms to monitor progress and effectiveness. Scholars therefore advocate using digital sources like Geographic Information Systems (GIS) and big data analytics to improve monitoring and encourage policy integration. These tools offer real-time insights into progress on the SDGs, and so can be used by policymakers to inform their decision-making and adjust as necessary.

Theoretical Framework

The Earth System Governance (ESG) framework is capable of understanding and addressing the complexities of climate-related governance. Thinking in terms of the five core dimensions of the Earth System Governance Project governance framework (architecture, agency, adaptability, accountability, and allocation) it analyses governance systems for global environmental issues. Given its specific relevance for studying how Sustainable Development Goals (SDGs) are actually incorporated into operational policies at lower echelons (in the case of Khyber Pakhtunkhwa (KP), Pakistan), we examine this framework in the following.

The ESG framework originates from a recognition that climate change is a multi-dimensional challenge and that appropriate governance systems have to be flexible, inclusive, and participatory (Biermann, 2014). It emphasizes the need for policymakers to coherently align objectives across various levels of governance and to release the meaningful involvement of policy stakeholders to improve policy governance. Because of this, it becomes a perfect theoretical basis when exploring the integration of SDG 13 (Climate Action), SDG 6 (Clean water and sanitation), and SDG 7 (Affordable and clean energy) in KP's governance structures.

Application of ESG Framework to SDG Integration in KP:

Architecture

With regard to architecture, it examines the structural design of governance systems with respect to institutional arrangements, legal frameworks, and policy coherence (Biermann, 2014). However, provincial climate policies such as the Khyber Pakhtunkhwa Climate Change Policy 2022 and national SDG strategies constitute governance architecture in the case of KP. Nevertheless, the non–alignment of these frameworks poses a gap in policy coherence and acts as an obstacle to integrating SDGs (UNDP, 2022). ESG brings tools to analyze these structural gaps and to recommend how to close them and align policy closer to purpose.

Agency

In terms of the agency dimension: the dimension explores the role and responsibilities of various actors namely government institutions, NGOs, and local communities in governance processes (Earth System Governance Project, 2018). In KP government departments, international donors, and community-based organizations all take the initiative in implementing climate-related initiatives. However, the governance agency is weakened by the limited capacity of provincial institutions and by the exclusion of marginalized communities from decision-making processes. Finally, an application of the ESG framework reveals power dynamics and processes for promoting more inclusive and participatory governance.

Adaptability

Adaptability is the adaptive ability of governance systems to face emerging challenges and uncertainties, primarily relating to climate change. Because of their extreme weather events — floods and droughts — adaptive governance mechanisms are required in KP. Current policies, however, do not possess the flexibility to react to these quickly changing conditions and respond after a delay and ineffective intervention (Haq, 2024). In addition, the implementation of the ESG framework requires dynamic and adaptive policy designs that fit with current and future climate risks.

Accountability

In governance processes, Accountability is related to mechanisms that guarantee transparency, accountability, or responsibility (Biermann, 2014). In SDG implementation, SDG implementation is undermined by weak monitoring and evaluation systems in KP. For instance, the lack of well-developed data collection and reporting frameworks restricts monitoring of progress in SDG 13 and associated objectives (UNESCAP, 2024). The ESG framework underscores the need for well-defined accountability mechanisms, enabling stakeholders to increase trust and legitimacy.

Allocation

In the allocation dimension, the allocation of resources, benefits, and responsibilities among stakeholders is examined (Earth System Governance Project, 2018). To SDG localization in KP, however, funding constraints and inequitable resource distribution present major barriers. The need for more financial support is evident in the phenomenon of poor climate resilience programs either being too small or ineffective for the size of the projects (Sultan et al., 2022).

This study is best suited to use the ESG framework, owing to its multidimensionality, which allows it to evaluate the governance system. Additionally, because of its emphasis on Adaptability and an accountable system, KP has to take up climate-related SDGs. Second, its architectural and actors' focus on governance provides insights into structure and participation in governance, which corresponds to the allocation dimension, while the allocation dimension maps onto the distribution dimension. As the aim of the study, this framework is used to come up with actionable strategies for improving SDG integration in KP's operational policies.

Methodology

This thesis presents a qualitative case study on how Khyber Pakhtunkhwa (KP) Pakistan integrates climate-related Sustainable Development Goals (SDGs) into their operational climate policies. This type of research that drills deeper into governance structures, policy frameworks, and what could be considered as contextual barriers in relation to forming partnerships in this region suits best the case study approach (Baxter & Jack, 2015). This study, in the light of SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 7 (Affordable and Clean Energy) seeks to understand the extent to which these goals are coherent with KP's governance systems. The analysis of governance and policy integration is guided by the Earth System Governance (ESG) framework which includes essential dimensions of governance: architecture, agency, Adaptability, accountability, and allocation (Biermann, 2014).

In order to maintain high authenticity and credibility, the research merely relies on secondary data sources. A review of provincial and national policy documents (the Khyber Pakhtunkhwa Climate Change Policy 2022, Environmental Protection Agency Khyber Pakhtunkhwa, 2022; Pakistan Climate Change Policy 2021, Government of Pakistan, 2021) and progress reports on SDG implementation (UNDP, 2022; Government of Pakistan, 2021) are utilized for data collection. Also, peer-reviewed academic literature is analyzed within journals like Global Environmental Change and Sustainable Development Journal. Additional insights into SDG progress and governance challenges are drawn from Institutional and organizational reports by the United Nations (UN, 2022), World Bank (2021), and Zeigermann (2019). In addition, we also included case studies of regions with socio-economic and climate contexts similar to KP, where the integration of the SDGs has been considered, and in particular, Bangladesh and Nepal (Avtar, 2019).

For the evaluation of the data collected, thematic analysis guided by the dimensions of the ESG framework was used. The coherence and alignment of policies are analyzed in the architecture dimension, and the agency dimension draws the roles and responsibilities of the many stakeholders involved (government institutions, NGOs, local communities) (Biermann, 2014). The flexibility of governance systems in addressing climate-related challenges (Cooper et al., 2015) and monitoring and reporting (UNESCAP, 2024) are adapted. Finally, allocation is explained to explore how resources and responsibility are shared by stakeholders (Sultan et al., 2022). Tables and matrices of thematic analysis findings are presented with alignment of KP's policies with SDG targets, highlighting governance barriers related to ESG dimensions, and suggesting strategies to improve SDG localization.

This research practice follows the norm of ethical research by using official and publicly available information for all the analysis, to maintain transparency and academic integrity. To avoid plagiarism and assure credibility, all APA 7 citation formats were used. Although, however, the study has some limitations. However, the use of secondary data limits adding primary insights from stakeholders such as policymakers and local communities in order to enrich the analysis. Moreover, gaps regarding up-to-date and localized data may constrain the depth of the findings. While these limitations exist, they guarantee the use of a systematic

and transparent approach to study how KP integrates climate-related SDGs in its operational policies.

Analytical Discussion

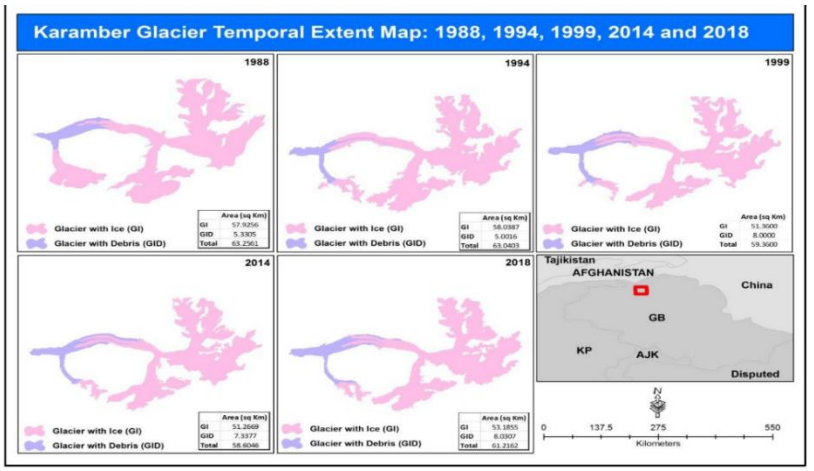
Like much of Pakistan, Khyber Pakhtunkhwa (KP) is susceptible to the growing impacts of climate change due to its geography and socioeconomic vulnerabilities. The province is confronted with a number of climate-related challenges such as glacial melt, erratic rainfall, flash floods, and deforestation, which considerably hinder socio-economic development. The opportunity exists in the integration of Sustainable Development Goals (SDGs), such as climate action (SDG 13), clean water (SDG 6), and affordable energy (SDG 7) to mitigate the adversities of climate change while enhancing development.

Yet the route to these goals in KP is challenging, and beset by governance constraints, resource limits, and weak policy integration. Specifically, this analytical narrative aims to assess KP's development in this context, identify hindering factors, and propose actionable recommendations for the accomplishments of climate-related SDGs. This analysis discusses KP's climate governance landscape and shows how statistical evidence can integrate with authentic graphical data.

Climate Change Vulnerability in KP

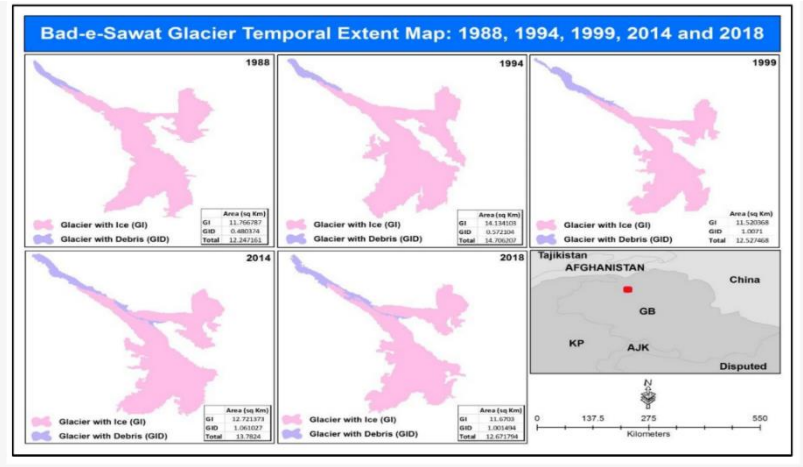
KP has found its topographical and socio-economic context to be breeding vulnerability to climate change. The province, where Hindukush and Himalayan mountain ranges are located, is especially vulnerable to the melting of the glaciers due to continually rising global temperatures. Over 33 percent of the region's glaciers are showing signs of rapid retreat recently, leading to Glacial Lake Outburst Floods (GLOFs) which destroy local communities and agricultural land (UNDP, 2022).

Figure 1



Karamber glacier temporal glacier change extent for 1988, 1994, 1999, 2014, and 2018. (Irfan et al., 2024)

Figure 2



Bad-e-Swat glacier temporal glacier change extent for 1988, 1994, 1999, 2014, and 2018. (Irfan et al., 2024)

In Figure 1 and Figure 2, the retreats of glaciers in the Himalayan region are highlighted alerting the people that this retreat accelerates the risk of flooding and affects KP's water supply. Additionally, floods in KP – like the catastrophic 2010 and 2022 events – have displaced millions of people, eroded livelihoods, and caused billions of dollars of economic damage.

Table 1

Economic Losses from Floods in KP (2010-2022)

Year	Disaster Type	Economic Loss (USD Billion)	Displaced Population
2010	Flood	3.1	1.5 million
2015	Earthquake	2.0	800,000
2022	Flood	5.5	2.2 million

Source: National Disaster Management Authority (NDMA)

Recurrent disasters such as these illustrate the necessity that the Government of KP places on adopting climate adaptation strategies, within its governance frameworks. However, there is little in the way of robust climate-resilient infrastructure to exacerbate the province's vulnerability.

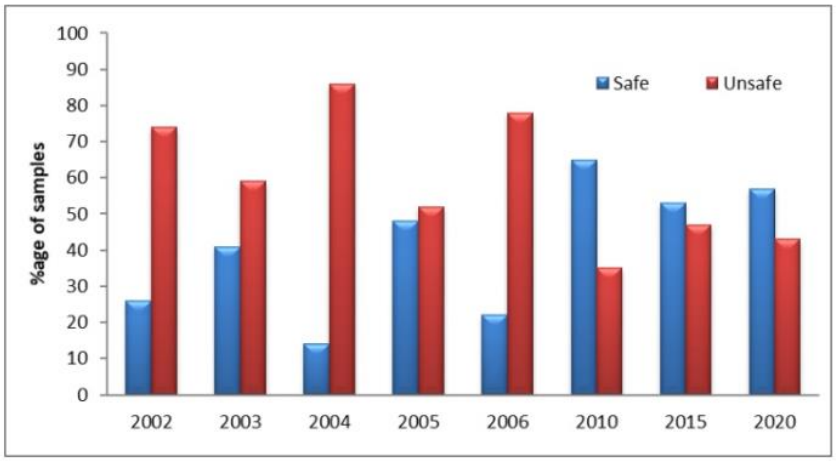
Progress on Climate-Related SDGs in KPK

On SDG 13, the provincial government has taken some steps, particularly in recognition of the Khyber Pakhtunkhwa Climate Change Policy 2022 and the globally acknowledged "Billion Tree Tsunami" projects. These initiatives have a double-pronged approach to reducing deforestation increasing carbon sequestration and improving ecosystem resilience. However, maintaining the long-term sustainability of such initiatives is still an issue. However, despite growing forest cover, afforestation programs are not integrated into a broader climate adaptation approach, hindering their effectiveness in enhancing resilience, the United Nations Development Programme (UNDP), 2022 states.

Clean water in KP still remains a major problem. Provincial dependence on glacial meltwater as a main source of water makes it vulnerable to changes in glacial dynamics. Also, the inadequate sewer infrastructure coupled with the fact that water sources are being polluted by diseases such as cholera worsens the health risks in rural areas.

Figure 3

Water Quality Trend in Khyber Pakhtunkhwa Province



Source: Pakistan Council of Research in Water Resources (2021)

As such, KP ranks below the national average in the Water Quality Index, reflecting the need for intensified investment in the purification and sanitation facilities systems. That the provincial government is working with international organizations, like UNICEF, to reach out to safe drinking water to rural districts is a step in the right direction but it needs to be scaled up to achieve SDG 6.

Pakistan terms KP as an 'electricity corridor' with great hydropower potential and boasts some 40% of Pakistan's electric power. However, the provincial

government has begun projects to realize that potential, such as micro hydropower plants in remote areas.

Table 2

Table 1: Key Power Sector Statistics

	Pakistan	KP
Installed Capacity MW		
Hydro	9,761	5,729
Thermal	27,137	-
Renewables (other than Hydro)	2,247	-
Total	39,145	5,729
Generation, GWh	137,039	16,064
Consumption, GWh	106,927	10,677
Per Capita Consumption, kWh	503	292

Source: World Bank (2020)

However, some private investors do invest in hydropower development, but (as with Nuclear) the niche is quite restricted The risks associated with evolving industries, new financing arrangements, project complexity, and various physical risks in KP result in a slow pace and scale of development on projects in KP. These projects face 2 key constraints:

1. Technical implantations and geological surveys take longer preparation time;
2. he large upfront cost and resource assessment, as well as social and environmental assessments; and

Challenges in Achieving Climate-Related SDGs

While climate adaptation and mitigation needs are growing, the allocation of financial resources to support climate programs falls short. Pakistan Economic Survey (2023) states that KP spends less than 1%, if anything, of its GDP on climate action, which, in light of the problems at hand, is much too little. Climate action is undermined by a fragmented governance structure in which provincial departments have overlapping mandates. Due to weak interdepartmental coordination, SDG-related projects suffer delays and inefficiencies. There is limited public awareness of the implications of climate change and sustainable practices. Awareness campaigns, as well as participatory governance models, need to be engaged to build resilience at the grassroots level.

Conclusion and Recommendation

Khyber Pakhtunkhwa (KP) is confronted with a number of pressing priorities in relation to the alignment of its policies to climate-related Sustainable Development Goals (SDGs) including SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 7 (Affordable and clean energy). Although laudable schemes including a 'Billion Tree Tsunami' and hydropower plants have been undertaken, systemic obstacles—such as poor interdepartmental coordination, insufficient allocation of resources, and a lack of public outreach—are blocking progress. An analysis of these challenges using the Earth System Governance (ESG) framework reveals the requirement for adaptive, accountable, and inclusive governance.

Recommendations for Improvement Include

1. An integrated provincial SDG strategy for developing policy coherence between sectors and alignment with national frameworks.
2. The enhancement of stakeholder engagement, particularly through engagement of and participation by marginalized communities and the private sector to strengthen participatory governance.
3. Enhancing investment in renewable energy and water management resource investment through international collaborations and public-private partnerships.
4. Deployment of adequate and effective ways to Monitor and Evaluate (I&E) the progress towards SDG using digital tools such as Geographic Information Systems (GIS) to track and make the outcome (achievement) of the goals much more unquestionable.

If KP addresses these gaps and capitalizes on its unique resources, it will stand as a model for sustainable development in Pakistan, with a contribution to both national and global efforts at climate resilience.

References

Arfanuzzaman, M., & Dahiya, B. (2019). Sustainable urbanization in Southeast Asia and beyond: Challenges of population growth, land use change, and environmental health. *Growth and Change*, *50*(2), 725–744. https://doi.org/10.1111/grow.12297
Google Scholar Worldcat Fulltext

Avtar, R., Aggarwal, R., Kharrazi, A., Kumar, P., & Kurniawan, T. A. (2019). Utilizing geospatial information to implement SDGs and monitor their Progress. *Environmental Monitoring and Assessment*, *192*(1). https://doi.org/10.1007/s10661-019-7996-9
Google Scholar Worldcat Fulltext

Baxter, P., & Jack, S. (2015). Qualitative case study Methodology: study design and implementation for novice researchers. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2008.1573
Google Scholar Worldcat Fulltext

Biermann, F. (2014). Earth System governance. In *The MIT Press eBooks*. https://doi.org/10.7551/mitpress/9780262028226.001.0001
Google Scholar Worldcat Fulltext

Blanc, D. L. (2015). Towards integration at last? The sustainable development goals as a network of targets. *Sustainable Development*, *23*(3), 176–187. https://doi.org/10.1002/sd.1582
Google Scholar Worldcat Fulltext

Chancel, L., Piketty, T., Saez, E., & Zucman, G. (Eds.). (2022). *World Inequality Report 2022*. Harvard University Press. https://books.google.com/books?hl=en&lr=&id=DN-VEAAAQBAJ&oi=fnd&pg=PA2&dq=Alvaredo,+F.,+Chancel,+L.,+Piketty,+T.,+Saez,+E.,+%26+Zucman,+G.+(2021).+World+Inequality+Report+2021.+Harvard+University+Press.&ots=eQwlEy3tU-&sig=1VoPg-QnaUyOcvZj9Y-gT6auSOs
Google Scholar Worldcat Fulltext

Cooper, S. J., & Wheeler, T. (2015). Adaptive governance: Livelihood innovation for climate resilience in Uganda. *Geoforum*, *65*, 96–107. https://doi.org/10.1016/j.geoforum.2015.07.015
Google Scholar Worldcat Fulltext

Environmental Protection Agency, Government of Khyber Pakhtunkhwa. (2022). *Khyber Pakhtunkhwa Climate Change Policy 2022*. Forestry, Environment & Wildlife Department. https://epakp.gov.pk/wp-content/uploads/2022/09/Khyber-Pakhtunkhwa-Climate-Change-Policy-2022.pdf
Google Scholar Worldcat Fulltext

ESCAP, U. (2024). *Multilevel governance for SDG localization in Asia and the Pacific*. https://repository.unescap.org/handle/20.500.12870/7427
Google Scholar Worldcat Fulltext

Government of Pakistan. (2021). *Pakistan Climate Change Policy 2021*. Ministry of Climate Change. https://mocc.gov.pk/SiteImage/Policy/NCCP%20Report.pdf
Google Scholar Worldcat Fulltext

Haq, F., Mark, B. G., Shum, C. K., Zeballos-Castellon, G., & Rahman, G. (2024). Effectiveness of Billion Trees Tsunami Afforestation Projects in restoration of forests in Pakistan. *Environment Development and Sustainability*. https://doi.org/10.1007/s10668-024-04573-x
Google Scholar Worldcat Fulltext

Hickel, J. (2019). The contradiction of the sustainable development goals: Growth versus ecology on a finite planet. *Sustainable Development*, *27*(5), 873–884. https://doi.org/10.1002/sd.1947
Google Scholar Worldcat Fulltext

Irfan, M., Shafiq, M., & Nergis, Y. (2024). Spatiotemporal variability analysis of glaciers in the Hindukush region of Pakistan using remote sensing data. *Atmosphere*, *15*(2), 193. https://doi.org/10.3390/atmos15020193
Google Scholar Worldcat Fulltext

Pakistan Council of Research in Water Resources (PCRWR). (2021). *Drinking water quality in Pakistan: Current status and challenges*. Ministry of Water Resources. https://pcrwr.gov.pk/wp-content/uploads/2021/10/Drinking-Water-Quality-in-Pakistan-2021.pdf
Google Scholar Worldcat Fulltext

Sultan, H., Zhan, J., Rashid, W., Chu, X., & Bohnett, E. (2022). Systematic Review of Multi-Dimensional Vulnerabilities in the Himalayas. *International Journal of Environmental Research and Public Health*, *19*(19), 12177. https://doi.org/10.3390/ijerph191912177
Google Scholar Worldcat Fulltext

UNDP. (2022). *SDG progress report for Pakistan 2022*. UNDP Pakistan. https://www.undp.org/pakistan/publications/undp-pakistan-annual-report-2022
Google Scholar Worldcat Fulltext

United Nations Development Programme (UNDP). (2022). Melting glaciers, growing lakes, and the threat of outburst floods. https://undp-climate.exposure.co/melting-glaciers-growing-lakes-and-the-threat-of-outburst-floods
Google Scholar Worldcat Fulltext

United Nations. (2022). *The SDG Progress Report 2022*. UN. https://digitallibrary.un.org/record/3980029/files/The-Sustainable-Development-Goals-Report-2022_English.pdf
Google Scholar Worldcat Fulltext

World Bank. (2020). *Khyber Pakhtunkhwa Hydropower and Renewable Energy Development Project* (Report No. PAD3508). International Bank for Reconstruction and Development & International Development Association. https://documents1.worldbank.org/curated/en/099950111072234047/pdf/P17671804998b80030ac4f0233dc0b995ba.pdf
Google Scholar Worldcat Fulltext

World Bank. (2021). *Variable renewable energy locational study*. World Bank. https://documents1.worldbank.org/curated/en/883241610741226840/pdf/Main-Report.pdf
Google Scholar Worldcat Fulltext

Zeigermann, U., & Böcher, M. (2019). Challenges for bridging the gap between knowledge and governance in sustainability policy – The case of OECD 'Focal Points' for Policy Coherence for Development. *Forest Policy and Economics*, *114*, 102005. https://doi.org/10.1016/j.forpol.2019.102005
Google Scholar Worldcat Fulltext