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Report of Policy Lab on Bridging Gaps in Climate Change Mitigation Policies and their Implementation in Pakistan

پاکستان میں موسمیاتی تبدیلی سے نمٹنے کی پالیسیوں کے اطلاق میں حائل رکاوٹوں کا خاتمہ

Policy Analysis & Recommendations- Part-2 of 11

Climate Policy Framework of Khyber Pakhtunkhwa ensured regional priorities were harmonized with national and international commitments

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بِسْمِ اللَّهِ الرَّحْمَـٰنِ الرَّحِيمِ

إِنَّ اللَّهَ لَا يُغَيِّرُ مَا بِقَوْمٍ حَتَّىٰ يُغَيِّرُوا مَا بِأَنفُسِهِمْ

(سورة الرعد 13:11)

ترجمہ (اردو):

بے شک، اللہ کسی قوم کی حالت نہیں بدلتا جب تک وہ خود اپنی حالت کو نہ بدلے۔

Translation (English):

Indeed, Allah does not change the condition of a people until they change what is in themselves.

(Surah Ar-Ra'd 13:11

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ يَرْجِعُونَ

(سورة الروم 30:41)

ترجمہ (اردو):

خشکی اور تری میں فساد ظاہر ہو گیا ہے، لوگوں کے اپنے ہاتھوں کے کیے ہوئے اعمال کی وجہ سے، تاکہ اللہ انہیں ان کے کچھ اعمال کا مزہ چکھائے، شاید کہ وہ باز آ جائیں۔

Translation (English):

Corruption has appeared on land and sea because of what the hands of people have earned, so that He may let them taste part of what they have done, that perhaps they will return (to righteousness).

(Surah Ar-Rum 30:41)

Climate Policy Framework of Khyber Pakhtunkhwa ensured regional priorities were harmonized with national and international commitments

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PREFACE

Climate change presents an existential challenge to Pakistan, demanding urgent, well-coordinated, and evidence-based policy responses. Recognizing the gravity of the issue, the Policy Lab on Climate Change Mitigation in Pakistan was conceived, designed, and led under the visionary guidance of Dr. Muqeem ul Islam, Chief Instructor, National Institute of Public Administration (NIPA), Peshawar, during the 41st Mid-Career Management Course. This initiative aimed to foster a dynamic and policy-oriented dialogue through a Public Policy Simulation Exercise, conducted from September 24th to 29th, 2024, followed by research presentations and seminars on September 30th and October 1st, 2024.

The Policy Lab brought together policymakers, researchers, and practitioners to develop actionable strategies for climate change mitigation, with a particular focus on Pakistan's national and regional policy frameworks. Structured into eleven dedicated research groups, the Policy Lab comprehensively addressed various dimensions of climate governance, adaptation, and mitigation. Each research group (RG) was tasked with developing strategic policy recommendations aligned with national priorities and international commitments.

RG-1: Task Force on National Climate Policy Framework and International Obligations focused on aligning Pakistan's policies with global frameworks like the Paris Agreement and the Sustainable Development Goals.

RG-2: Task Force on Climate Policy Framework of Khyber Pakhtunkhwa ensured regional priorities were harmonized with national and international commitments.

RG-3: Committee on Biodiversity, Ecosystem Restoration, and Reforestation worked to protect biodiversity, enhance reforestation, and promote ecosystem restoration.

RG-4: Committee on Climate-Smart Agriculture, Food Security, and Sustainable Land & Water Management explored innovative solutions for sustainable agriculture and resource management.

RG-5: Committee on Energy Conservation, Renewable Resources, and Electric Vehicle Adoption developed policies for energy efficiency and transition to renewable energy.

RG-6: Committee on Carbon Financing, Carbon Credits, and Global Climate Resilience Investments proposed financial mechanisms to support climate action and resilience building.

RG-7: Committee on Capacity Building, Climate Education, and Mass Awareness emphasized the need for public engagement, education, and institutional capacity development.

RG-8: Committee on Climate-Adaptive Infrastructure and Environmentally Sustainable Urban Growth addressed sustainable urbanization and resilient infrastructure development.

RG-9: Committee on Circular Economy and Sustainable Waste Management advanced the adoption of circular economy principles and efficient waste management systems.

RG-10: Committee on Climate Risk Reduction, Disaster Preparedness, and Flood Resilience developed strategies for disaster risk reduction and flood resilience.

RG-11: Committee on Gender Inclusion and Cultural Engagement for Climate Mitigation ensured inclusivity in climate policies, with a focus on empowering women and recognizing cultural dimensions.

The research outcomes of the Policy Lab present a roadmap for Pakistan's climate resilience, rooted in policy innovation, multi-stakeholder engagement, and actionable frameworks. This report serves as a valuable resource for decision-makers, practitioners, and researchers committed to mitigating climate change impacts in Pakistan. It is hoped that the insights and recommendations put forth in this document will inform future policies and drive Pakistan towards a sustainable and climate-resilient future.

It is hoped that this document will serve as a significant milestone in the design, implementation, and facilitation of policies, paving the way for broader economic and industrial transformation in Pakistan, انشاءالله .

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September 23, 2024

Executive Summary

Analysis of the KP Climate Change Policy 2022

The Khyber Pakhtunkhwa (KP) Climate Change Policy, revised in 2022, is a forward-thinking framework designed to address the increasingly severe challenges posed by climate change in the region. This updated policy serves as a critical tool for integrating climate action into provincial governance and planning, aligning with both national and international commitments on climate change. The policy is structured around two core principles: adaptation and mitigation, aiming to bolster resilience across multiple sectors, including agriculture, water resources, forestry, biodiversity, and energy. While the policy's breadth is commendable, there are notable gaps that must be addressed to ensure its successful implementation and long-term effectiveness.

Strengths of the KP Climate Change Policy

One of the primary strengths of the 2022 KP Climate Change Policy is its comprehensive approach. By addressing nearly all significant sectors of the provincial economy, the policy ensures that climate actions are not treated in isolation. Instead, it integrates climate resilience into broader development strategies, which is essential for sustainable growth. These sectors include agriculture, water resources, energy, forestry, and biodiversity, all of which are inextricably linked to climate change dynamics. This sectoral integration is a major leap forward in creating a multi-faceted climate change response that aligns with the province's overall development goals.

The policy also aligns well with national and international frameworks. It mirrors the priorities outlined in Pakistan's National Climate Change Policy (NCCP) of 2021, as well as contributing to the country's Nationally Determined Contributions (NDCs) under the Paris Agreement. The policy's alignment with the United Nations Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action), demonstrates KP's commitment to global climate objectives. By prioritizing actions to reduce greenhouse gas emissions and increase climate resilience, the policy strengthens the province's position on the international climate stage.

Institutional coordination is another notable strength of the policy. The establishment of the Provincial Climate Change Policy Implementation Committee (PCCPIC) fosters better collaboration among the relevant departments, while the Environmental Protection Agency (EPA) plays a pivotal role in overseeing the implementation of climate actions across sectors. This coordination is critical to ensuring that climate change considerations are integrated into all government operations, facilitating an organized and unified response to climate challenges.

Weaknesses of the KP Climate Change Policy

Despite its comprehensive framework, the KP Climate Change Policy suffers from several weaknesses. The most significant of these is the policy's broad and non-specific nature. While it sets ambitious goals for mitigating greenhouse gas emissions and

enhancing climate resilience, it lacks clear, measurable targets that would help track progress and hold relevant stakeholders accountable. The absence of quantitative targets for emissions reductions, water conservation, or climate resilience in agriculture makes it difficult to assess the effectiveness of the policy's implementation and to identify specific areas that require more attention.

Another limitation of the policy is the generality of its recommendations. While the policy advocates for enhanced climate resilience in agriculture, for example, it does not specify which crops should be prioritized, which regions are most vulnerable to climate impacts, or the precise methods of achieving resilience. This lack of specificity hampers the practical application of the policy and reduces its potential for tangible impact.

Additionally, the policy's heavy reliance on external funding sources presents a significant challenge. The successful implementation of the KP Climate Change Policy is contingent on securing international financial support from organizations such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Global Environment Facility (GEF). This dependency on external resources raises concerns about the sustainability of the policy's initiatives, particularly in the face of shifting international priorities and fluctuating funding availability.

Alignment with International Climate Obligations

The KP Climate Change Policy is well-aligned with Pakistan's international climate commitments, including its obligations under the Paris Agreement, which was adopted in 2015. Pakistan's updated Nationally Determined Contributions (NDC) commit the country to reducing its greenhouse gas emissions by 50% by 2030, contingent upon receiving international financial support. The KP policy's focus on climate adaptation, reforestation, and clean energy development contributes directly to achieving these targets. Furthermore, Pakistan's participation in international climate negotiations, such as COP 27 and COP 28, emphasizes the importance of securing financial and technological support for climate adaptation and mitigation efforts. The policy's integration with these international frameworks strengthens KP's global credibility and enhances its chances of receiving the support necessary to implement its climate actions.

The KP policy also contributes to achieving several Sustainable Development Goals (SDGs), including SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), and SDG 6 (Clean Water and Sanitation). By focusing on renewable energy, sustainable agricultural practices, and improved water management, the policy aligns with Pakistan's broader efforts to address climate change while improving the quality of life for its citizens.

This executive summary provides an overview of the current climate change legal framework in Khyber Pakhtunkhwa (KP), the key challenges and opportunities identified, and a set of actionable recommendations for enhancing climate action in the province. The purpose is to strengthen KP's climate change response through legal reforms, improving institutional capacity, and ensuring effective coordination across various sectors.

Conclusion

1. **Alignment with National and International Law**:

The KP climate change legal framework is generally aligned with national and international climate change laws, ensuring coherence in the province's climate action strategies with broader global and national objectives. This alignment is vital for KP's participation in international climate efforts, including commitments under the Paris Agreement.

2. **Coordination Issues**:

One of the primary challenges identified is the lack of effective coordination between provincial and national climate change authorities. This fragmentation leads to inefficiencies in implementing climate policies and programs. There is a need for stronger collaboration and communication between these entities to ensure a unified climate change response.

3. **Opportunities for Legal Reforms**:

Significant opportunities exist for introducing legal reforms to address climate-specific needs. The current legal framework lacks provisions that mandate climate change measures across various sectors, such as forestry, agriculture, and urban development. Implementing climate-specific legislation can ensure more structured and consistent actions across the province.

4. **Weak Capacity of EPA**:

The Environmental Protection Agency (EPA) in KP, which is responsible for enforcing environmental laws and policies, suffers from weak institutional capacity. This limitation hampers its ability to effectively implement climate action initiatives. Strengthening EPA's technical and administrative capabilities is critical to achieving climate goals.

5. **Enforcement and Implementation Challenges**:

There are significant issues related to enforcement and implementation of climate policies in KP. Despite the existence of relevant laws, inadequate enforcement mechanisms and limited resources have undermined their effectiveness. A robust monitoring and enforcement framework must be established to ensure compliance and accountability.

6. **Limited Cross-Sector Coordination**:

Effective climate action requires coordinated efforts across various sectors, including agriculture, water management, urban planning, and disaster risk reduction. Currently, there is insufficient collaboration between relevant departments, leading to fragmented and uncoordinated actions. Enhanced inter-departmental coordination is essential to tackle climate change comprehensively.

7. **Community Engagement and Public Awareness**:

Public awareness and community engagement are critically low in KP. There is a lack of awareness regarding climate change impacts, the role of communities in mitigation and adaptation efforts, and available climate change policies. Engaging local communities and raising awareness is essential to foster a climate-conscious society and increase public support for climate action initiatives.

8. **Reactive Approach**:

The departmental approach to climate change is often reactive, responding to climate events as they occur rather than proactively addressing risks through preventive measures. This approach needs to be transformed into a more proactive one, with early intervention strategies and risk management systems in place.

9. **Low Priority for Environmental Protection Council's Proceedings**:

The proceedings of the Chief Minister's (CM) Environmental Protection Council have not been prioritized adequately, limiting the council's effectiveness in addressing environmental and climate challenges. Increased attention and a structured approach are needed to ensure that the council functions optimally.

Recommendations

A set of comprehensive recommendations has been developed to address the challenges identified and capitalize on the opportunities for climate action in KP. The proposed actions, along with their key performance indicators (KPIs) and timelines, are detailed below:

1. **Strengthen Legal Frameworks for Climate Action (EPA)**
   - **Proposed Action**: Revise the EPA Act to include provisions for climate change, including mandatory climate-specific provisions and district-level climate master planning.
   - **KPIs**: Incorporate three new sections into the EPA Act: overriding effect, mandatory climate provisions, and district master planning.
   - **Timeline**: 3-6 months
2. **Master Planning for KP Districts**
   - **Proposed Action**: Develop master plans for climate disaster-prone districts starting with six pilot districts.
   - **KPIs**: Develop and approve master plans for Swat, Chitral, Upper Dir, Nowshehra, Charsada, and Mansehra.
   - **Timeline**: 1-2 years
3. **Revised Legal Framework for the Forest Department**
   - **Proposed Action**: Revise the legal framework of the Forest Department to incorporate climate change provisions and promote reforestation efforts.
   - **KPIs**: Introduce a new section in the Forest Department's law, focusing on climate change and tree plantation programs like the BTT project.
   - **Timeline**: 3-6 months
4. **Strengthen the CM Environmental Protection Council**
   - **Proposed Action**: Regularize CM Environmental Protection Council meetings and ensure high-level leadership.
   - **KPIs**: Issue meeting calendars and ensure meetings are chaired by the Minister for Forests and Climate Change in the absence of the CM.
   - **Timeline**: Regular, with initial actions in a month.
5. **Revised Legal Frameworks for Key Sectors (Agriculture, Disaster Management, Irrigation, Transport)**

- **Proposed Action**: Introduce climate change provisions in the legal frameworks of key departments, ensuring sector-specific climate responses.
- **KPIs**: Incorporate climate change provisions into the laws of agriculture, disaster management, irrigation, and transport.
- **Timeline**: 9 months

6. **Develop Early Warning Systems and Disaster-Resilient Infrastructure**
   - **Proposed Action**: Install early warning systems and build disaster-resilient infrastructure in six pilot districts.
   - **KPIs**: Successful installation of early warning systems in each district.
   - **Timeline**: 1 year
7. **Expanded Reforestation and Biodiversity Protection**
   - **Proposed Action**: Legislate for large-scale reforestation and biodiversity protection, aiming for 400,000 hectares of forest cover.
   - **KPIs**: Expand forest cover by 400,000 hectares and promote community-based forest projects.
   - **Timeline**: 3-4 years
8. **Provide Legal Cover to P&D Climate Cell**
   - **Proposed Action**: Introduce mandatory provisions for climate cells in the Planning and Development (P&D) Department's legal framework.
   - **KPIs**: Cabinet approval for climate cell provisions.
   - **Timeline**: 3 months

Conclusion

The proposed actions and legal reforms are designed to create a more structured, proactive, and collaborative climate response in Khyber Pakhtunkhwa. By strengthening legal frameworks, improving institutional capacity, and fostering multi-sector coordination, KP can significantly enhance its climate resilience and contribute to national and international climate change goals. The recommended actions should be implemented with urgency and regular follow-up to ensure the effective integration of climate change considerations into all sectors of governance.

Introduction

Climate change refers to a long-term shift in temperature and weather patterns. Its causes can be natural or man-made. Since the 18th century, climate change has been affecting global temperatures. Currently, climate change is one of the most hotly debated topics, and certain protocols have been formulated to combat it. In this regard, Pakistan, being one of the worst-affected countries, has also been striving hard to minimize the effects of climate change and has formulated certain regulations. Climate change poses serious and significant threats to the ecosystems of Pakistan, especially in Khyber Pakhtunkhwa (KP) Province, but these challenges can be mitigated through transformative climate actions. According to scientific evidence, disasters related to climate change, such as riverine floods, storm water, glacier bursts, heat strokes, droughts, and other vector-borne diseases, are expected to increase in the coming decades.

The Khyber Pakhtunkhwa Environmental Protection Agency (EPA) Act was promulgated in 2014. A Climate Change Cell was established in the EPA in 2014 to study the impacts of climate change on different sectors of the province and to devise a coping strategy and action plan. The Cell steered the formulation of the first-ever Climate Change Policy of the province. KP is the first province in the country to have formulated and approved a Provincial Climate Change Policy in 2017, and the Chief Minister's Environmental Protection Council (EPC) was established in 2017 to supervise and steer climate change initiatives in the province. The Provincial Climate Change Policy was updated in 2022 along with the Action Plan, 2022. The KP Climate Policy 2022 is a policy document setting the goals regarding climate change, while the KP Climate Change Action Plan 2022 is the implementation document.

The policy also focuses on the province of KP's susceptibility to climate change, and the steps that need to be taken, i.e., adaptation and mitigation in different sectors of the economy, as well as climate change awareness in the province. Adaptation to climate change involves measures to either prevent natural and human systems from becoming vulnerable or to prepare for changes in climate, whereas mitigation focuses on reducing greenhouse gas (GHG) emissions through technological advancements or by curtailing activities that result in GHG emissions.

Problem Statement

Khyber Pakhtunkhwa is highly vulnerable to climate change, experiencing severe climate-related events such as glacial lake outburst floods (GLOFs), floods, and droughts. Despite efforts through the Khyber Pakhtunkhwa Environmental Protection Act of 2014 and the Climate Change Policy of 2022, gaps persist in effectively implementing these frameworks and aligning them with national and international climate obligations. This study aims to critically assess KP's legal framework on climate change, its alignment with other sectoral policies, and identify gaps to recommend actionable improvements.

Research Methodology

The data for this study was collected from both primary and secondary sources. Primary data includes interviews with public officials at the Environmental Protection Agency (EPA) Peshawar, the Department of Environment Peshawar, the Department of Forestry Peshawar, and the Planning and Development Department Peshawar. Secondary sources include the Khyber Pakhtunkhwa Environmental Protection Act of 2014, the Khyber Pakhtunkhwa Climate Change Policy of 2022, and the Khyber Pakhtunkhwa Climate

Change Action Plan of 2022, among others. Articles published in various renowned journals have also been analyzed. Comparative analysis, PESTLE analysis, gap analysis, and SWOT analysis have been conducted to propose practical and pragmatic policy and institutional remedial measures.

Literature Review

KP is a province with a wide range of geography, from mountains to fertile plains, and it has its own set of problems. It hosts a large percentage of Pakistan's glaciers, which, although a crucial freshwater supply, are quickly melting due to the increase in temperatures (Rasul, 2021). Research has shown that rising temperatures, changing precipitation patterns, and increased glacial melt are major threats to both the environment and economy of Pakistan (Abbas & Shah, 2020). According to the Asian Development Bank (2021), if current trends persist, Pakistan's temperature could rise by 3°C by the century's end, which would have serious consequences for agriculture, water resources, and public health. In KP, the rise in temperatures is accelerating glacier melt, a vital component of the Indus River system. This has resulted in more frequent flooding in the short term and poses a risk of severe water shortages in the future (Rasul, 2021). Beyond water-related issues, KP's agricultural sector, a crucial part of its economy, is also at risk. A study by Ahmad, Majeed, and Alam (2020) revealed that fluctuations in temperature and rainfall have already caused a decline in crop yields and increased food insecurity in the province. The growing occurrence of extreme weather events, such as flash floods and droughts, is disrupting agricultural cycles, diminishing income for farming communities, and worsening poverty in rural areas (Siddiqui, 2020). Additionally, the region's biodiversity, forests, and ecosystems are threatened as changing climate conditions alter habitats and raise the risk of forest fires (Qureshi & Syed, 2021).

The government of KP has acknowledged the pressing need to tackle climate change, as demonstrated by the establishment of the Chief Minister's Environmental Implementation Committee on Climate Policy in 2017. This council marks a crucial advancement in incorporating climate resilience into the province's governance and development strategies (Government of KPK, 2020). It has been instrumental in developing the province's climate change strategy, which encompasses reforestation, water management, and projects focused on climate-resilient infrastructure. Nonetheless, despite KP's ambitious initiatives, several obstacles persist. Qureshi and Batool (2018) argue that the province lacks the necessary institutional capacity and technical know-how to effectively execute its climate policies. Additionally, there are concerns about the sustainability of projects like the Billion Tree Tsunami (BTT), as critics have raised concerns about monitoring, community engagement, and the long-term upkeep of forest areas (Naseer & Saleem, 2019). The task force's efforts are further hindered by financial limitations, with the province heavily dependent on federal assistance and international funding to support climate-related initiatives (Sajjad & Naeem, 2021).

Pakistan, as a participant in international environmental agreements like the Paris Agreement, has pledged to lower its GHG emissions and improve its climate resilience. Although Pakistan contributes a small fraction to global emissions, less than 1%, its susceptibility to climate change demands robust adaptation and mitigation strategies (Munir & Azam, 2020). A significant aspect where international obligations are shaping provincial policy is the emphasis on sustainable forestry and agriculture, which are essential

for lowering emissions and boosting climate resilience. However, research indicates that turning international climate agreements into practical provincial policies is challenging due to limited financial resources and local capacity (Irfan, 2019; Qureshi & Batool, 2018). Despite advancements in KP, a major hurdle is the lack of coordination between provincial and federal climate policies. Sarwar and Zafar (2019) note that the absence of a cohesive national climate strategy that includes provincial viewpoints has resulted in disjointed efforts, leaving provinces like KP struggling to obtain the necessary resources for climate adaptation and mitigation. Additionally, the provincial government's dependence on external funding has raised concerns about the long-term viability of its climate initiatives (Sajjad & Naeem, 2021). Another issue is the insufficient integration of climate considerations into broader development plans. Although KP has initiated steps to tackle climate change through efforts like the Chief Minister's Task Force, climate adaptation has not been fully incorporated into provincial infrastructure, health, and education policies (Hussain et al., 2022).

Analysis of KP Climate Change Policy 2022

The KP Climate Change Policy, updated in 2022, provides comprehensive guidelines for addressing the climate-related challenges faced by the province. The policy represents a significant step forward in provincial-level climate governance, aligning itself with Pakistan's updated National Climate Change Policy (NCCP) of 2021. The KP policy emphasizes both adaptation and mitigation strategies across various sectors, including agriculture, water resources, forestry, biodiversity, and energy.

One of the major strengths of the KP Climate Change Policy is its comprehensive scope, covering nearly all relevant sectors of the provincial economy. The policy addresses agriculture, livestock, water resources, energy, and biodiversity, recognizing the interconnection of these sectors with climate change. By doing so, it ensures that climate actions are integrated into broader development frameworks, rather than treated in isolation.

Another strength lies in its alignment with national and international climate frameworks. The KP policy mirrors the priorities laid out in the NCCP (2021) and contributes to Pakistan's Nationally Determined Contributions (NDCs) under the Paris Agreement. By aligning with international commitments like the Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action), the policy enhances the credibility of provincial efforts on the global stage.

Institutionally, the KP policy promotes coordination among provincial departments and encourages cross-sectoral collaboration. The establishment of the Provincial Climate Change Policy Implementation Committee (PCCPIC) represents a positive step in improving interdepartmental cooperation. The policy also underscores the role of the EPA in managing climate actions, with the EPA playing a central role in coordinating with other provincial departments.

Despite its strengths, the KP Climate Change Policy has some weaknesses, particularly its broad, non-specific nature. One major issue is the lack of quantitative targets. While the policy outlines ambitious goals for reducing GHG emissions and increasing climate resilience, it does not provide specific, measurable targets to guide implementation.

Another weakness is the general nature of the policy recommendations. While it offers high-level guidance for climate action, it often lacks specificity regarding how these actions

should be implemented. For instance, the policy advocates for enhancing climate resilience in agriculture but does not specify which crops should be prioritized or which regions are most vulnerable.

Additionally, the policy's heavy reliance on external funding sources presents a significant challenge. The KP Climate Change Policy explicitly acknowledges that its successful implementation is contingent upon securing international financial support from donors such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Global Environment Facility (GEF).

Alignment of KP's Legal framework with International Climate Obligations

Kyoto Protocol (1997):

The purpose of the Kyoto Protocol was to reduce emissions; however, it was not binding on Pakistan as a developing country.

Paris Agreement (2015):

Pakistan submitted its updated NDC in 2021, committing to reduce its greenhouse gas emissions by 50% by 2030, contingent on receiving international financial support (with 15% unconditional reductions and 35% conditional on external support). The focus is on climate adaptation, clean energy development, reforestation, and improving resilience to climate impacts. It emphasizes adaptation measures to cope with floods, droughts, and extreme weather events. Pakistan is required to regularly report its progress on climate actions and contribute to the global effort to limit the temperature rise to well below 2°C, with efforts to limit it to 1.5°C.

COP 27 (2022) and COP 28 (2023):

Pakistan played a pivotal role in COP 27 by advocating for a loss and damage fund for developing countries, one of the main outcomes of the conference. This fund aims to provide financial assistance to countries suffering from the adverse effects of climate change. At COP 27, Pakistan emphasized the need for funding to address both loss and damage and adaptation efforts. COP 28 is expected to follow up on these negotiations, particularly around operationalizing the loss and damage fund, and Pakistan will continue to push for adequate financial and technological support to meet its climate adaptation and mitigation goals.

Sustainable Development Goals (SDGs):

Pakistan is actively working towards achieving the 17 SDGs, particularly those related to climate.

- **SDG 7 (Affordable and Clean Energy):** Pakistan aims to increase the share of renewable energy sources, particularly hydro, wind, and solar, to provide affordable and sustainable energy.
- **SDG 13 (Climate Action):** Pakistan's climate action plan involves strengthening resilience to climate-related hazards, promoting sustainable agricultural practices, and building climate-smart infrastructure.
- **SDG 6 (Clean Water and Sanitation):** Given its vulnerability to water scarcity and flooding, Pakistan is focusing on water management and climate-resilient infrastructure.
- **SDG 15 (Life on Land):** This includes efforts for reforestation (e.g., the Billion Tree Tsunami project) and protecting ecosystems, in alignment with climate and environmental goals.

Pakistan's Vision 2025 integrates many of the SDGs, aligning them with national policies to reduce poverty, improve health and education, and ensure environmental sustainability.

Analysis

Gap Analysis of legal frameworks of difference sectors in KP with respect to KP climate change legal framework

Current Situation	Gap/Deficiency	Desired Situation
Agriculture -The KP Agriculture Act 2014 does not explicitly address climate change directory but emphasis has been placed on sustainable practices. - very little research on climate-resilient crops. -Weak Enforcement & Monitoring	- Lack of legal mandate for climate smart agriculture covering drought-resistant crops, water-efficient techniques. - Outdated laws No proper mechanism for enforcement of sustainable agricultural practices related to climate adaptation.	- Inclusion of climate smart agriculture practice and laws. - Introduction of innovative provision for promotion of resilient crops - inclusion of relevant provision for water efficient irrigation practices. Improved enforcement frameworks for ensuring climate-adaptive farming.
Irrigation Department - existing polices focusing on traditional water management techniques. - Little efforts in flood control and small dam's construction. - poor Cross-sectoral Coordination	- Absence of legal provisions for climate-resilient water management (e.g., flood management, efficient irrigation). - absence of integration for water resource management (glacial melt, floods).	- Up to Date legal frameworks inclusive of climate-resilient water management techniques. -proper incorporation of climate data in water resource management (e.g., glacier monitoring). -Establishment of legal mechanisms for intra-department coordination (water, agriculture, and forestry).
Forest Department - Project-based legal framework (Billion Tree Tsunami) for afforestation. - sustainable forest management lacking climate specificity. - Lack of continuous Monitoring & Sustainability	- lack of sustainable and long-term approach for afforestation - poor legal framework for community engagement and long-term forest management. - Little legal provisions for long-term monitoring and sustainability of afforestation projects.	- Shift from project-based forestry legislation for long-term forest management laws with climate resilience mandates. - Strengthen community involvement through legally binding provisions. - Introduction of legal provisions for continuous monitoring, sustainability, and community engagement.
Disaster Management (Relief) Department - Legal framework is more about reactive approach - limit inclusion of	- Limited integration of climate risks and lack of proactive disaster risk reduction measures. - No legal mandate for early	- need for revision of disaster management laws by integrating climate change risks and mandating of proactive measure.

climate-related risks, but limited scope. - Weak Coordination with Climate Policy	warning systems for climate-related calamities - Weak coordination between climate change frameworks and disaster management.	- Implementation of legal mandates regarding early warning systems and disaster-resilient infrastructure. - Strengthening of legal coordination between disaster management and rest of the climate-sensitive departments e.g. water and agriculture.
Energy Department Focus on Renewable energy lacking legal mandates for implementation. - support for hydropower but minimal support for solar and wind energy - No Decarbonization Goals	- no legislation regarding de-carbonization to promote renewable energy development (solar, wind) and reduce emissions. - no legal incentives for energy efficiency. - Lack of legal framework for decarbonization or emission reduction goals.	- Enactment of legal mandates for renewable energy generation and setting of provincial targets for emissions control. - Introducing of legal frameworks for promotion of energy efficiency in industries and buildings. - Alignment of energy laws with climate goals to reduce GHG emissions.
Environmental Protection Agency - The KP Environmental Protection Act 2014 promotes environmental conservation but lacks climate-specific regulations. - General provisions about pollution control lacking focusing on climate-focused. - Poor Monitoring & Reporting	- absence of legal regulations for industries for reduction their carbon footprint. - Poor enforcement mechanism for climate-related environmental standards. - absence of mechanism GHG emissions and monitoring	- Strengthening the EPA's legal mandate for inclusion of specific climate change regulations (e.g., emission reduction targets for industries). - need for improved enforcement mechanisms. - need for introduction of legal frameworks requiring systematic monitoring and reporting of GHG emissions.
Transport Department -More Focus on vehicular emissions lacking climate-specific directives. - Limited promotion of sustainable transportation.	- absence of legal framework for promotion of low-emission vehicles or electric vehicle infrastructure. - absence of provisions for promoting public transport and reducing vehicular emissions.	- need for Updating of transport laws to regulate the promotion of electric vehicles (EVs) and develop EV infrastructure. - need for inclusion of legal provisions for enhancing public transportation and non-motorized transport options.

Comparative analysis of climate legal frameworks KP, Punjab, and Kerala (India) based on key legal aspects:

Key Legal Aspects	KP	Punjab	Kerala (India)
Climate-Specific Legislation	Limited, reactive	Moderate	Comprehensive
Integration in Sectoral Policies	Minimal integration	Some integration	Strong integration across sectors
Enforcement Mechanisms	Weak	Moderate	Strong and well-established
Community Participation	Limited	Moderate	Strong, legally mandated
Cross-Sectoral Coordination	Poor	Moderate	Strong, well-coordinated
Climate-Resilient Infrastructure	Developing	Moderate	Well-developed
Renewable Energy Focus	Growing, but slow	Active	Strong, established
Public Awareness Initiatives	Developing	Moderate	Comprehensive

Khyber Pakhtunkhwa (KP)

KP has been gradually focusing on renewable energy (hydropower) and afforestation through the Billion Tree Tsunami (BTT). However, climate-specific legislation is not fully developed, and there is limited integration of climate action into sectoral policies (e.g., agriculture, water management). Additionally, enforcement mechanisms and community participation are relatively weak. Cross-sectoral coordination is minimal, which impacts the overall effectiveness of climate strategies.

Punjab

Punjab has made progress in integrating climate resilience into urban infrastructure, energy, and industrial policies. Enforcement mechanisms are stronger than in KP but still require further strengthening. However, community participation and cross-sectoral coordination need improvement to ensure comprehensive climate adaptation.

Kerala(India)

Kerala stands out with a comprehensive legal framework that includes strong enforcement mechanisms, climate-specific legislation, and well-developed public awareness initiatives. It also emphasizes community participation, ensuring that local governments are actively involved in climate adaptation. However, Kerala's challenge lies in balancing economic growth with its strong climate mandates, as implementation at the local level can sometimes face resource constraints. This comparison highlights how Kerala's more decentralized and legally robust framework can serve as a model for KP and Punjab, particularly in terms of enforcement, community involvement, and cross-sectoral integration.

PESTLE Analysis of KP's Legal Framework on Climate Change

Political

There is a lack of strong political will at both the provincial and national levels to combat climate change. The KP government has demonstrated a commitment to aligning its climate actions with national and international frameworks, which is critical for securing political support for climate projects. Only two meetings of the council have been held so far.

Economic

The policy's reliance on external funding presents a significant economic challenge. While international donors can provide valuable resources, there is a need for the province to develop a more sustainable financial strategy. This could include mobilizing domestic resources and attracting private sector investment through public-private partnerships.

Social

Public awareness of climate change remains limited, particularly in rural areas. The policy acknowledges the importance of raising public awareness, but more needs to be done to engage local communities in the implementation of climate actions. This is particularly important for ensuring that vulnerable populations, such as farmers and indigenous communities, are included in the decision-making process.

Technological

The lack of access to advanced climate technologies presents a significant challenge. While the policy recognizes the need for climate-smart technologies, it does not provide a clear strategy for acquiring or scaling up these technologies. The province would benefit from leveraging international climate finance mechanisms to invest in technologies such as early warning systems, precision farming, and renewable energy solutions.

Legal

The policy's legal framework is relatively weak in terms of enforcement. While the EPA has the mandate to oversee climate actions, it often lacks the regulatory authority to enforce compliance. Strengthening the legal framework would help ensure that climate goals are met and that provincial departments are held accountable for their actions.

Environmental

The province is highly vulnerable to climate-related disasters, including floods, droughts, and glacial lake outburst floods (GLOFs). These events pose a significant threat to the province's economy, development, and livelihoods. The policy emphasizes the need for climate resilience, but more needs to be done to build adaptive capacity in vulnerable sectors such as agriculture and water resources.

SWOT Analysis of the EPA

Strengths

- **Existing Legal Framework:** The KP Environmental Protection Act 2014 provides a basic legal framework for environmental conservation and pollution control.
- **Close Alignment with National and International Policies:** The EPA's activities are closely aligned with Pakistan's national commitments under international climate agreements like the Paris Agreement and SDGs.
- **Emphasis on Environmental Monitoring:** The EPA has determined environmental standards and conducts environmental assessments, particularly for industrial pollution and resource management.

Weaknesses

- **Poor Enforcement Mechanisms:** The enforcement mechanisms of the EPA are weak, and there are insufficient penalties for violations of environmental regulations to deter noncompliance.
- **Limited Focus on Climate Change:** There is no explicit provision for climate change in the EPA; rather, there is more emphasis on general environmental conservation and pollution control rather than GHG emissions and climate

resilience.

- **Lack of Resources:** There is a lack of sufficient funding, technology, and personnel to implement and enforce robust climate-related policies and environmental monitoring programs.
- **Poor Public Engagement:** Low community involvement and low public awareness regarding climate change hinder effective environmental governance.

Opportunities

- **Climate-Specific Legislation:** The EPA can introduce specific regulations for climate and strengthen its mandate to focus on climate adaptation and mitigation, such as regulating carbon emissions and promoting sustainable industry practices.
- **International Climate Finance:** The EPA can strive to secure international funding (e.g., Green Climate Fund) to increase capacity for climate resilience projects.
- **Technological Innovation:** There are opportunities for modern environmental monitoring technologies (e.g., satellite imaging, remote sensors) to enhance environmental oversight and enforcement.

Threats

- **Political Instability:** Lukewarm responses from political elites and a lack of long-term commitment to climate and environmental issues can hinder the EPA's efforts.
- **Overlapping Jurisdiction:** Issues between federal and provincial environmental authorities can lead to confusion and inefficiencies in the implementation of climate policies.
- **Fast Urbanization and Industrial Growth:** Increasing industrial activity and urban sprawl without adequate environmental safeguards can exacerbate pollution and environmental degradation.

Issues and Challenges

Lack of Strong Legislative Backing

KP lacks a comprehensive Climate Change Act or specific provincial legislation that enforces climate policy across sectors. Most of the actions remain policy-driven rather than mandated by law. The absence of legally binding commitments makes it difficult to enforce mitigation and adaptation measures, leading to inconsistent implementation across departments and sectors.

Centralized Governance, Coordination Issues, and Limited Integration Across Sectors

The KP institutional framework for climate governance is relatively centralized, with decisions often made at the provincial level. This can create bottlenecks in implementation, especially at the district and local levels where adaptation and disaster management efforts are most needed. The lack of effective coordination between provincial and district authority's hampers localized climate action. Climate change adaptation, disaster resilience, and sector-specific initiatives (e.g., in agriculture or water management) require stronger integration with local governance bodies.

Weak Institutional Capacity

Although KP provincial departments like forestry, agriculture, and energy are tasked with addressing climate change, they often lack the technical expertise, human resources, and financial support to execute comprehensive climate strategies. This results in a gap between

policy formulation and actual implementation, with climate action plans remaining largely aspirational rather than operational.

Inadequate Legal Framework for Disaster Risk Management

Given that KP is highly vulnerable to climate-induced disasters such as floods, landslides, and glacier melting, its disaster management framework lacks a strong legal and institutional link with climate change policies. Legal gaps in integrating disaster risk reduction with climate change policies make the province more vulnerable to future climate risks.

Resource Allocation and Funding Issues

KP's climate change policy requires substantial financial resources that are currently insufficient. Many of the climate change-related projects, including afforestation (e.g., Billion Tree Tsunami) and renewable energy initiatives, rely heavily on external funding or sporadic government allocations, leading to financial instability.

Poor Monitoring and Enforcement

KP in general, and the EPA in particular, lack clear mechanisms for monitoring, evaluation, and enforcement of climate-related policies and action plans. As a result, climate projects can be implemented inconsistently across the province, with little accountability for achieving the desired outcomes or for measuring the effectiveness of mitigation and adaptation efforts.

Insufficient Focus on Climate-Resilient Infrastructure

KP's infrastructure development, particularly in urban areas, does not adequately integrate climate resilience measures. The lack of climate-resilient infrastructure increases the risk of flooding, heat stress, and other climate-related impacts in urban and peri-urban areas, especially with rapid urbanization.

Inadequate Use of Climate Data and Research

The legal and institutional framework in KP does not adequately emphasize the use of climate science, data, and research in policy formulation and implementation. This lack of data-driven policymaking reduces the effectiveness of KP's climate strategies, as decisions are often made without a solid understanding of localized climate impacts, vulnerabilities, and risks.

Challenges in Implementing Renewable Energy Policies

Although KP's Climate Change Policy 2022 emphasizes renewable energy development, particularly hydropower, the legal and institutional mechanisms for promoting energy diversification (e.g., solar and wind energy) are underdeveloped. Hydropower projects face environmental and social challenges, such as displacing communities and affecting water flow, while other renewable sectors like solar and wind are underutilized, slowing progress towards energy transition and emission reduction goals.

Conclusion

- The KP climate change legal framework is aligned with national and international law on climate change.
- There are coordination issues between provincial and national climate change authorities.
- There are opportunities for legal reforms and climate-specific legislation.
- The EPA, being the flagbearer organization, has weak capacity.
- There are enforcement and implementation issues.
- There is limited cross-sector coordination.
- There is poor community engagement and public awareness.
- The departmental approach is more reactive than proactive.
- There is a low priority for the environmental protection council's proceedings.

Recommendations

Logical Framework Matrix

S#.	Proposed Action	KPIs	Means of Verification	Timeline
1.	Strengthened Legal Frameworks for Climate Action (EPA)	-Change in EPA Act by incorporating three new sections (1) overriding effect (2) introduction of climate change mandatory provisions. (3) climate specific master planning of all districts	- Approved copy of the act signed by the Governor	3-6 Months
2	Master Planning of the entire KP districts starting from 6 districts by consultants	Climate disaster prone 6 districts to be piloted for the master plan (Swat, Chitral, Upper Dir, Nowshehra, Charsada, Mansehra)	-Copies of master plan duly signed by the concerned DC and approved by EPA	1-2-year
3	Revised Legal Framework of Forest Department	- introduction of new section after incorporating climate change mandatory provision and tree plantation (Project like BTT)	- Approved copy of the act signed by the Governor	3-6 Months
4	CM Environmental Protection Counsil	-issuance of meeting Calander along with tasks for the year in advance -In absence of CM	-Minutes of the meeting duly signed -Notification authorizing climate minister	Regular In a month

		to be chaired by Minister for forest and climate change	-Notification regarding meeting calendar	Regular
5	Revised legal frameworks of following Departments Agriculture Disaster management Irrigation transport	- introduction of one new section in law of each department about climate change	-Approved copies of the laws/Regulations duly signed by the Competition Authorities	9 Months
6	Early Warning Systems and Disaster-Resilient Infrastructure	-6 Pilot districts	- installed early warning system in each district.	1 year
7	Expanded Reforestation and Biodiversity Protection through legislation	-400,000Hectares of forest cover added. - Number of community-based forest projects. Copies of Law	-Forest department reports. -Satellite imagery.	3-4 years
8.	Legal cover to P&D Climate Cell	-introduction of mandatory provision in P&D Law regarding climate cell	-Approved by Cabinet	3 months

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