Print ISSN: 0215-0411 - Online ISSN : 0215-0419
Volume: 3 , Issue: 4, Winter 2024

Special Issue
Winter 2024

Khyber Journal of Public Policy

KJPP

National Institute of Public Administration

National School of Public Policy

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-7 of 11

Capacity Building, Climate Education, and Mass Awareness Emphasized the Need for Public Engagement, Education, and Institutional Capacity Development

Team Lead
Dr. Muqeem Islam Soharwardy
Phd (Public Policy & Governance)
MPhil (Economic Development)
Chief Instructor, NIPA, Peshawar
Editor, Khyber Journal of Public Policy
Former Director General (NAVTTC), GoP
muqeemz@gmail.com, 0092-343-5090648

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)

Capacity Building, Climate Education, and Mass Awareness emphasized the need for public engagement, education, and institutional capacity development

Research Group

- **Dr. Muqeem Islam Soharwardy (Team Lead)**
- Zahid Ullah Khan
- Shahzad Javed
- Muhammad Nadeem Akhtar
- Jehanzeb Khan Orakzai

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 .

Dr. Muqeem Islam Soharwardy,
PhD (Public Policy & Governance) NDU
MPhil (Economic Development)
Chief Instructor,
National Institute of Public Policy (NIPA)
National School of Public Policy (NSPP)
Editor, Khyber Journal of Public Policy (KJPP)
Former Director General, NAVTTC, GoP
muqeemz@gmail.com , +92 3435090648

September 23, 2024

Executive Summary

The issue of climate change is one of the most pressing global challenges, and Pakistan, particularly the province of Khyber Pakhtunkhwa (KP), is highly vulnerable to its adverse impacts, including extreme weather events such as floods, droughts, and the melting of glaciers. As a response, the Government of Pakistan, along with provincial governments, has initiated a range of climate change policies, frameworks, and capacity-building strategies aimed at both mitigating climate risks and adapting to the changing climate. However, despite these efforts, significant challenges remain, particularly in the areas of education, awareness, and capacity building. To address these gaps, there is an urgent need for a multifaceted approach that includes strengthening institutional frameworks, promoting climate education, and enhancing public awareness.

This study explores the challenges and opportunities related to capacity building, climate education, and mass awareness at the national and provincial levels, with a particular focus on Khyber Pakhtunkhwa. Through a combination of qualitative and quantitative research methods, including literature reviews, interviews, gap analysis, and comparative analysis with India, the study provides a comprehensive evaluation of the current status of climate change adaptation and proposes key recommendations for improvement.

Key Findings

1. **Policy Gaps and Challenges**: Both federal and provincial policies, while providing a comprehensive framework for climate change action, face implementation challenges. The National Climate Change Policy (2012) and other related policies such as the National Adaptation Plan (2013) and the Climate Change Act (2017) emphasize the need for capacity building, climate education, and public awareness. However, these policies are often hampered by limited resources, inadequate institutional coordination, and a lack of trained professionals in the public and private sectors. The provincial policies, particularly the Khyber Pakhtunkhwa Climate Change Policy (2016), also highlight the need for capacity building but face challenges such as insufficient funding and institutional weaknesses.
2. **Institutional Challenges**: Federal and provincial institutions, such as the Ministry of Climate Change (MoCC), the National Disaster Management Authority (NDMA), the Provincial Disaster Management Authority (PDMA), and the Khyber Pakhtunkhwa Environmental Protection Agency (EPA), play crucial roles in implementing climate change policies. However, the capacity of these institutions is often limited by factors such as inadequate funding, lack of trained personnel, and fragmented coordination among stakeholders. Strengthening these institutions is essential for effective climate change adaptation in Pakistan.
3. **Climate Education and Public Awareness**: One of the most significant gaps identified in the study is the insufficient integration of climate change education

into school curricula and public awareness campaigns. Many educational institutions lack comprehensive climate change programs, and teachers often do not receive adequate training on climate change-related topics. As a result, there is limited public understanding of climate change, and the general population remains largely unaware of the urgent need for climate action. Existing awareness campaigns are also criticized for delivering mixed messages, which undermine their effectiveness in motivating behavior change.

4. **Comparative Analysis with India**: A comparative analysis with India highlights several successful strategies employed by the Indian government to address similar challenges. India's emphasis on integrating climate change education into school curricula, fostering collaboration between government and civil society, and providing consistent public messaging on climate risks has led to more effective public engagement. Pakistan can benefit from adopting some of these strategies, particularly in the context of improving the educational framework and enhancing public awareness campaigns.

Key Recommendations

1. **Strengthening Institutional Capacity**: It is crucial to enhance the capacity of key federal and provincial institutions responsible for climate change adaptation, including MoCC, NDMA, PDMA, and the EPA. This can be achieved through targeted capacity-building programs, improved coordination, and increased investment in human resources.
2. **Expanding Climate Education**: Climate change education should be integrated into school curricula across all levels of education in Pakistan, with a particular focus on Khyber Pakhtunkhwa, which is particularly vulnerable to climate risks. Additionally, teacher training programs should be established to ensure that educators are equipped with the necessary knowledge and skills to teach climate change-related topics effectively.
3. **Enhancing Public Awareness Campaigns**: Public awareness campaigns should be designed with a clear and consistent message on the importance of climate action. These campaigns should target a wide range of audiences, including local communities, youth, and policymakers, and should focus on building a culture of sustainability and resilience to climate impacts.
4. **Leveraging International Support and Partnerships**: Pakistan should seek to strengthen international cooperation in climate change adaptation by aligning its efforts with global initiatives such as the Paris Agreement and the United Nations Sustainable Development Goals (SDGs). Collaborating with international organizations and donors will provide additional resources and technical expertise needed to implement climate change policies more effectively.
5. **Monitoring and Evaluation**: Effective monitoring and evaluation mechanisms should be put in place to assess the progress of climate change adaptation programs. This will help identify gaps and areas for improvement, ensuring that resources are being used efficiently and that the most vulnerable communities are receiving the support they need.

6. **Fostering Community-Led Initiatives**: Community engagement is crucial for the success of climate change adaptation strategies. Local communities should be empowered to take action on climate change by providing them with the necessary resources, knowledge, and support. This includes promoting climate-resilient agricultural practices, water management techniques, and disaster risk reduction measures at the grassroots level.

Khyber Pakhtunkhwa (KP), a province in Pakistan, faces significant challenges in effectively addressing climate change. These challenges primarily revolve around the gaps in Capacity Building, Climate Education, and Mass Awareness. The ability of the provincial government to develop and execute a cohesive climate response strategy is impeded by limited skilled personnel, inadequate financial resources, and fragmented institutional coordination. These barriers hinder KP's potential to implement a robust climate change management plan. Furthermore, there is a notable absence of climate-related topics in educational curricula, limiting the public's understanding and engagement with climate change. Additionally, mass awareness campaigns face hurdles such as inconsistent messaging and cultural resistance, which dilute public support for climate action.

The management of climate change in KP demands urgent attention to these interconnected issues. Addressing these challenges requires a multi-faceted approach, involving the collaboration of government agencies, educational institutions, NGOs, and community organizations. To make substantial progress in climate change management, KP needs to prioritize the development of comprehensive strategies in three key areas: capacity building, climate education, and mass awareness. By focusing on these aspects, KP can foster a more resilient, informed, and proactive society that is better equipped to address both current and future climate change impacts.

Key Issues and Challenges

1. **Capacity Building**: The lack of skilled personnel in environmental sectors poses a significant challenge for the province. There are limited training programs for officials and key leaders, which reduces the effectiveness of climate-related policy formulation and implementation. Additionally, there is insufficient coordination between government bodies, NGOs, and private sector stakeholders, resulting in fragmented efforts and inefficiencies in tackling climate change.
2. **Climate Education**: Climate change is not adequately incorporated into educational curricula, which limits the younger generation's understanding of environmental issues. Furthermore, teachers are not provided with enough training and resources to effectively teach climate-related topics, further reducing the effectiveness of educational initiatives. This gap in climate education hampers public awareness and active engagement, especially among youth, who are key agents of change.
3. **Mass Awareness**: Public awareness campaigns about climate change often suffer from inconsistent messaging and lack of cultural sensitivity, reducing their impact. Cultural resistance also plays a significant role in undermining support for climate change initiatives. Without a clear, unified message, and community involvement, mass awareness efforts are often not sustainable or impactful.

Recommendations and Way Forward

To effectively manage climate change and address the identified challenges, the following recommendations and strategies are proposed:

1. **Strengthening Capacity Building**:
    - Develop targeted training programs on climate change for officials and leaders, in collaboration with academic institutions and international organizations.
    - Enhance recruitment and retention strategies by offering competitive salaries, professional development opportunities, and job security to attract skilled personnel in environmental sectors.
2. **Improving Resource Allocation**:
    - Advocate for increased budget allocations for climate change initiatives and climate education, emphasizing their long-term benefits for the province.
    - Encourage public-private partnerships to pool resources and expertise, ensuring sustainable climate action and addressing funding gaps.
3. **Enhancing Climate Education**:
    - Integrate climate change topics into school curricula at all levels, ensuring expert input from environmental scientists and educators.
    - Provide training and resources for educators through professional development workshops to equip teachers with the tools needed to effectively teach climate-related subjects.
4. **Boosting Mass Awareness Efforts**:
    - Establish a cohesive communication strategy for consistent messaging about climate change across various media channels and demographics.
    - Promote community involvement through local initiatives and participatory activities to ensure that mass awareness campaigns are effective and culturally relevant.
5. **Fostering Collaboration and Coordination**:
    - Create multi-stakeholder platforms for knowledge sharing and resource coordination among government bodies, educational institutions, NGOs, and local communities.
    - Leverage technology to enhance communication and coordination between all stakeholders, facilitating better climate resilience.
6. **Monitoring and Evaluation**:
    - Establish a robust monitoring and evaluation framework to assess the impact of climate change initiatives and provide continuous feedback for improvement.
    - Improve access to climate data in KP to inform decision-making and policy development.

Conclusion

The effective implementation of climate change mitigation and adaptation strategies in Pakistan, particularly in Khyber Pakhtunkhwa, requires a coordinated and inclusive approach. While significant progress has been made in developing policies and frameworks, much remains to be done to strengthen institutional capacity, promote climate education, and raise public awareness. By addressing these critical gaps and adopting a more collaborative approach, Pakistan can enhance its resilience to the impacts of climate change and contribute to global efforts to combat this urgent threat.

Introduction

Effective implementation of climate change mitigation and adaptation strategies in Pakistan, particularly in Khyber Pakhtunkhwa, requires collaborative efforts from government institutions, civil society, and local communities (Saeed, 2020). The Khyber Pakhtunkhwa Climate Change Policy provides a framework for provincial action, outlining key sectors for intervention, including agriculture, water, and forestry (Government of Khyber Pakhtunkhwa, 2022). To enhance policy impact, capacity-building initiatives for government officials and local stakeholders are crucial, focusing on climate-resilient practices and disaster risk reduction (Ahmed & Iftikhar, 2022). Simultaneously, integrating climate change education into school curricula and promoting mass awareness campaigns can foster a culture of sustainability, driving behavioral change and community-led initiatives (Raza, 2023; IPCC, 2021).

Problem Statement

At the global and national levels, initiatives have been taken to address climate change vulnerabilities; however, there appears to be a significant gap in education, capacity building, and public awareness. Consequently, a comprehensive analysis is needed to identify the challenges faced at the federal level and particularly by the Khyber Pakhtunkhwa government in effectively implementing climate change policies and to propose recommendations for improvement.

Scope

This study aims to:

- Encompass a multidimensional approach to the issue, taking into account both national and global aspects related to capacity building, climate education, and mass awareness regarding climate change.
- Provide comprehensive insights into the challenges posed by existing policies at the national and provincial levels in capacity building, climate education, and mass awareness.
- Conduct a detailed comparative analysis with India to put forth certain recommendations and a way forward, using different analytical tools.

Research Methodology

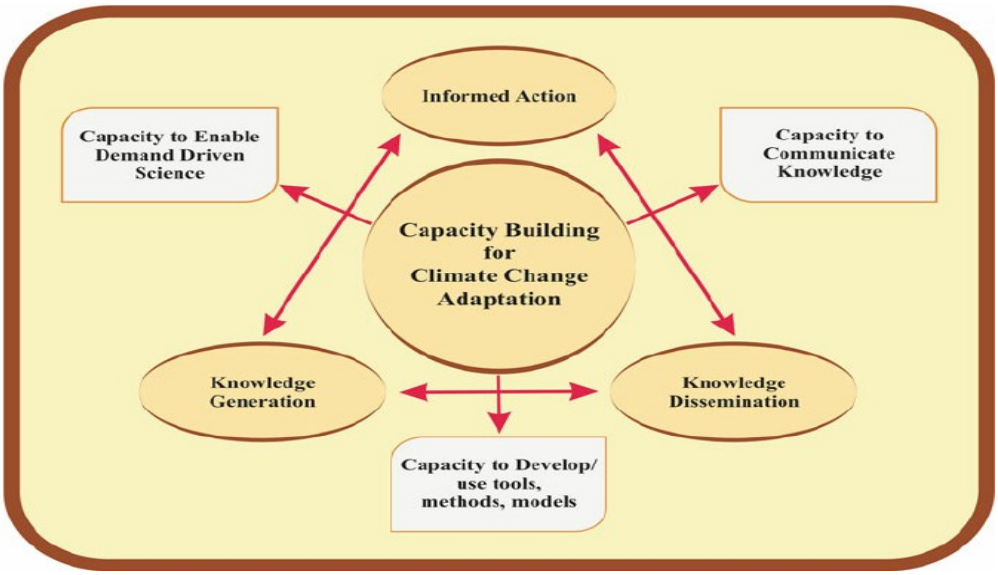
Qualitative and quantitative approaches have been applied, utilizing both primary and secondary sources. These sources include the institutional legal framework, policies at the provincial and federal levels, and research articles published on climate change. Additionally, interviews were conducted with ten groups in their respective departments regarding climate change capacity building, education, and mass awareness. Besides this, comparative analysis, gap analysis, statistical analysis, and PESTEL analysis have been conducted, followed by a log framework.

Literature Review

The capacity building, climate education, and mass awareness regarding climate change at the national level and Khyber Pakhtunkhwa level reveal a complex interplay of challenges and opportunities that hinder effective climate action. Various studies highlight the critical gaps in institutional capacity and the lack of trained professionals in governmental and non-governmental organizations, which impede the implementation of climate-related programs (Awan et al., 2022; Khan et al., 2023). Additionally, the integration of climate education within school curricula remains insufficient, with many educational institutions

failing to address climate change comprehensively, resulting in a lack of awareness among students (Ali & Bibi, 2023). This is compounded by limited resources allocated for training educators and the absence of consistent communication strategies that can engage the broader public effectively (Raza & Ali, 2023). Furthermore, existing mass awareness campaigns often deliver mixed messages, which can confuse stakeholders and dilute public engagement (Saeed et al., 2023). The literature also points to the necessity of fostering collaboration among various stakeholders, including government agencies, educational institutions, and community organizations, to create cohesive strategies that enhance climate education and awareness (Khan & Ahmad, 2023). By synthesizing these findings, it becomes clear that a multifaceted approach is essential to address the critical issues surrounding climate change in Khyber Pakhtunkhwa, emphasizing the need for increased investment in capacity building, comprehensive climate education, and targeted mass awareness initiatives to empower communities and enhance resilience against climate impacts.

The Role of Capacity Building for Climate Change Adaptation.



The Role of Federal Institutions in Capacity Building for Climate Change Adaptation in Pakistan

Pakistan is highly vulnerable to climate change impacts, including extreme weather events, rising temperatures, and water scarcity. Building capacity to adapt to these changes is crucial for resilience and sustainable development. Federal institutions play a vital role in capacity building for climate change adaptation in Pakistan.

Policies and Frameworks

National Climate Change Policy (2012)

Pakistan's climate policy aims to strengthen government and community capacity for climate action through training, institutional support, research, private sector engagement, and international collaboration. Key efforts are detailed in Sections 5.4 and 6.4 on Capacity Building and Implementation.

National Adaptation Plan (2013)

The National Adaptation Plan (2013) emphasizes strengthening institutions, technical expertise, and communities for climate resilience, with a focus on agriculture, water, and infrastructure. Key actions are detailed in Sections 3.2, 4.2, and 5.2.

Climate Change Act (2017)

The Climate Change Act (2017) prioritizes capacity building by establishing the National Climate Change Authority (NCCA) to oversee training, research, public awareness, and international collaboration. The Act mandates resource allocation for these efforts, outlined in Sections 4, 7, 10, and 15.

Pakistan's Nationally Determined Contributions (NDCs) under the Paris Agreement

Pakistan's NDCs under the Paris Agreement stress capacity building in Sections 3 (Mitigation), 4 (Adaptation), 5 (Finance), and 6 (Technology Transfer). The Ministry of Climate Change is tasked with coordinating these efforts, emphasizing institutional capacity, technical expertise, and public awareness.

National Disaster Management Plan (2010)

The National Disaster Management Plan (2010) emphasizes capacity building through enhanced institutional capacity, technical expertise, and public awareness (Section 3.4). It establishes the NDMA to oversee initiatives (Section 4.2) and prioritizes training and research in disaster management (Sections 5.3 and 6.4).

Federal Institutions

Ministry of Climate Change (MoCC)

The Ministry of Climate Change (MoCC), under the Climate Change Act (2017), focuses on capacity building through institutional strengthening, research (Section 7), and international cooperation (Section 10). MoCC's initiatives support climate adaptation, emissions mitigation, and NDC implementation.

National Disaster Management Authority (NDMA)

The NDMA, under the Disaster Management Act (2010), enhances disaster risk management capacity through training and stakeholder collaboration (Sections 5 and 6), preparing officials and communities to respond effectively to disasters.

Pakistan Environmental Protection Agency (EPA)

The Pakistan Environmental Protection Agency (EPA) prioritizes capacity building under the Environmental Protection Act (1997) (Section 6(a)) to enhance compliance and technical expertise (Section 7), promoting environmental awareness and sustainable development through training programs.

Ministry of Water Resources

The Ministry of Water Resources, under the Indus River System Authority Act (1992) (Section 5(1)(d)) and the Pakistan Water and Power Development Authority Act (1958) (Section 3(2)), enhances capacity for sustainable water management through training programs and stakeholder engagement, while collaborating on water policies and strategies.

Ministry of Food Security

The Ministry of Food Security, under the Agriculture Produce Markets Act (1977) (Section 3(1)(c)) and the Pakistan Agricultural Research Council Ordinance (1984) (Section 4(2)), focuses on capacity building to enhance agricultural productivity and food security through training programs for farmers and stakeholder engagement.

Projects and Programs at Federal Level.

Name of Project	Executed by	Funded by	Cost	Duration	Key Objective
Climate Phase II	MoCC	UNDP	540,000 USD	2023 – 2024	Train youth and women in green skills, and on eco-tourism and livelihood opportunities.
Water Sector Capacity Building and Advisory Services Project	Ministry of Water Resources	IDA/World Bank	44.81 (M) USD	2016 to 2021	Training and capacity building at federal and provincial levels, i.e., MoWR, O/o CEA/FFC, PCIW, PIDs, FATA, Gilgit-Baltistan.
Climate Resilient Urban	MoCC	UNDP	56.825 (M) PKR	2019-2024	Climate-resilient, safe, and sustainable cities.
Building Pakistan's Resilience to Climate Change	MoCC	WWF	77.8 (M) USD	2021 onward	Ecosystem-based flood risk management.
Water Resource Management in Leather Industrial Zone	MoCC	UNIDO	5.5 Million USD	2022 onward	Low emissions and climate-resilient development.

MYHP Project	AKRS	AKRS, UNICEF	7.8 (M) USD	2017 onward	Natural disaster response and recovery.
Sustainable Waste Management Solutions	MoCC	UNIDO	20.7 (M) USD	2022 onward	Municipal and industrial waste management.
SAR Strengthen Climate Adaptation and Resilience	MoCC	GIZ	10 (M) Euro	2021 onward	Climate adaptation and resilience risk management focusing on vulnerable populations.

S. No	Year	No. of Courses	Men	Women	Total
1.	2010	27	750	95	845
2.	2011	24	777	169	946
3.	2012	5	277	18	295
4.	2013	25	1012	124	1136
5.	2014	47	1204	239	1443
6.	2015	25	595	174	769
1	2016	20	749	111	860
8.	2017	9	288	36	324
9.	2018	27	905	163	1068
10.	2019	17	541	170	711
11.	2020	6	259	28	287
12.	2021	17	356	77	433
13.	2022	6	162	36	198
14.	2023	20	1307	406	1713
15.	2024	17	872	214	1186
Total		292	10079	2035	12114

The Role of Khyber Pakhtunkhwa's Institutions in Capacity Building for Climate Change Adaptation in the Province

Khyber Pakhtunkhwa is vulnerable to climate change impacts, including glacier melting, floods, and droughts. To address these challenges, KP's institutions play a crucial role in capacity building for climate change adaptation.

Policies and Frameworks

KP Climate Change Policy (2016)

The KP Climate Change Policy (2016) emphasizes capacity building to address climate change through training programs for officials (Section 4.2), institutional development in vulnerable districts (Section 4.3), and research collaborations with universities and organizations (Section 5.1(c)).

KP Disaster Management Policy (2015)

The KP Disaster Management Policy (2015) focuses on capacity building for disaster resilience through training programs (Section 3.2), the establishment of the KDMA to coordinate efforts (Section 4.1), and the development of disaster management plans with regular drills (Section 5.3). Section 6.2 encourages research collaborations with universities for improved disaster risk reduction.

The KP EPA Act (2014)

The KP EPA Act (2014) focuses on capacity building through stakeholder training (Section 11), research (Section 15), and collaboration with organizations for knowledge sharing (Section 26), with the Provincial Environmental Protection Council advising on these initiatives (Section 22).

Institutions

KP Environmental Protection Agency (EPA)

The KP EPA, under the 2014 Act, prioritizes capacity building through stakeholder training (Section 11) and environmental research (Section 15), enhancing regulation, enforcement, and sustainable development.

Provincial Disaster Management Authority (PDMA)

The PDMA Khyber Pakhtunkhwa, under the 2015 Act, emphasizes capacity building through training (Section 28) and disaster risk reduction research (Section 30), enhancing preparedness and resilience.

KP Agriculture Department

The Agriculture Department in KP, under the 2016 Climate Change Policy, focuses on capacity building through training in climate-resilient agriculture (Section 4.3) and research in climate-smart farming (Section 5.2).

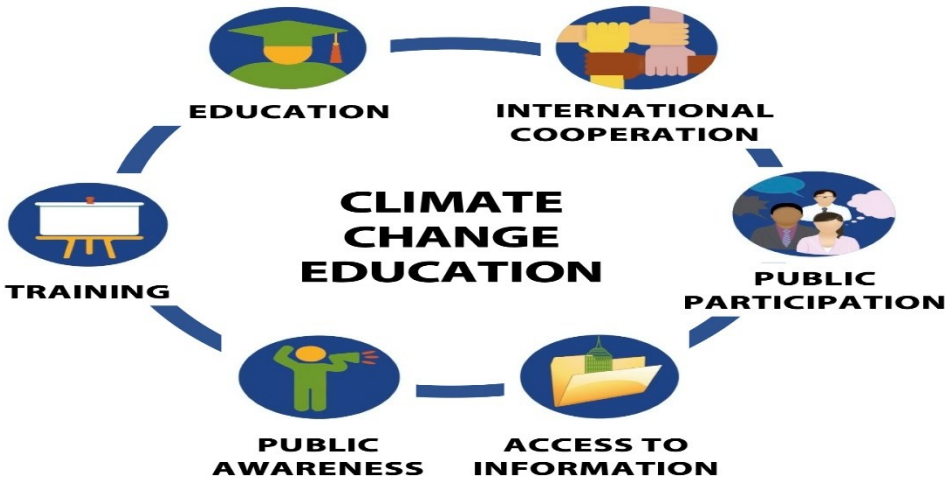
KP Forest Department

The Forest Department in KP, under the 2019 Act, prioritizes capacity building for sustainable forest management (Section 6) and conducts training on climate-resilient practices and reforestation (Section 11).

Projects

Name of Project	Executed by	Funded by	Cost	Duration
SAP 039	P&D Deptt KP	UNDP &World Bank	9.8 Million USD	2024 on word
BTTP	Environment Deptt KP	Local	13.669 Billion PKR	2019 on word
BTASP	Environment Deptt KP	Local	372 Million PKR	2022 on word
Climate Resilience through Horticulture Intervention in KP	Agriculture Department	World Bank	778 Million PKR	2022 on ward
GZD Command Area	Agriculture Department	Local & World bank	4.23 Billion PKR	2016 on ward
KP-RISP	P&D Department	Local & World Bank	109 Billion PKR	2023 on word
KP-FSSP	Agriculture Department	Local, ADB &Japan Aid	88 Million USD	2024 on word
KP-RAP	C&W Department	Local & World Bank	69.440 Billion PKR	2022 on ward

The Role of Climate Education for Climate Change Adaptation.



The Role of Federal Institutions in Climate Education for Climate Change Adaptation in Pakistan

Climate education is crucial for climate change adaptation in Pakistan. Federal institutions play a vital role in promoting climate education.

Policies and Frameworks

National Climate Change Policy (2012)

The National Climate Change Policy (2012) emphasizes integrating climate education into school curricula (Section 3.5) and capacity-building programs for stakeholders (Section 4.2(c)). It also supports public awareness campaigns (Section 5.3(d)) and the establishment of research centers for climate change management (Section 6.2).

Climate Change Act (2017)

The Climate Change Act (2017) prioritizes climate education and awareness in Pakistan by mandating the promotion of education through curricula and training (Section 9), the establishment of research centers (Section 10), and capacity building for stakeholders (Section 12).

National Education Policy (2017)

The National Education Policy (2017) emphasizes climate education for sustainable development by integrating it into curricula (Section 4.3), including sustainable living skills (Section 5.2.0), and providing teacher training in climate change (Section 7.3).

Pakistan's Nationally Determined Contributions (NDCs)

Pakistan's Nationally Determined Contributions (NDCs) stress the importance of climate education for adaptation (Section 3.2), capacity building for stakeholders (Section 4.1(c)), and promoting sustainable lifestyles (Section 5.3).

Federal Institutions

Ministry of Climate Change (MoCC)

The Ministry of Climate Change (MoCC) is tasked with promoting climate education in Pakistan under the Climate Change Act (2017), coordinating nationwide programs (Section 5), and developing curricula for stakeholders (Section 9(1)(c)), while also establishing research centers (Section 12(1)(d)).

Ministry of Education and Professional Training (MoEPT)

The Ministry of Education and Professional Training (MoEPT) is responsible for integrating climate change education into Pakistan's educational framework as mandated by the National Education Policy (2017), which includes curriculum incorporation (Section 4.3), development of sustainable living skills (Section 5.2.0), and teacher training programs (Section 7.3).

National Disaster Management Authority (NDMA)

The National Disaster Management Authority (NDMA) promotes climate education under the Disaster Management Act (2010) by raising awareness (Section 4(h)), coordinating training programs (Section 5(1)(c)), and developing guidelines for educational curricula (Section 6(2)(d)).

Pakistan Environmental Protection Agency (EPA)

The Pakistan Environmental Protection Agency (EPA) promotes climate education by conducting public awareness programs (Section 6), training stakeholders (Section 7(1)(c)), and collaborating with educational institutions to integrate climate education into curricula (Section 12(2)(d)).

Higher Education Commission (HEC)

The Higher Education Commission (HEC) promotes climate education by advancing research in environmental science (Section 3(2)(c)), establishing climate study centers (Section 4(2)(b)), and developing related curricula (Section 10(1)(d)).

Projects

Name of Project	Executed by	Funded by	Cost	Duration
Climate Box	MoCC	UNDP (the Government of the Russian Federation.)	$766,422	2017-2021
Recharge Pakistan	MoCC Federal Flood Commission (FFC) WWF-Pakistan	Green Climate Fund (GCF) (USAID) Coca-Cola Foundation and WWF-Pakistan	66 Million USD 21 Million USD	2023 on ward
Pakistan Hydro met & Climate Services Project (PHCSP)	MoCC	World Bank	188 (M) USD	2018-2024
Ten Billion Tree Tsunami Phase-1	MoCC	Govt of Pakistan PSDP	125 Billion PKR	2019-2023

The Role of Khyber Pakhtunkhwa's Institutions in Climate Education for Climate Change Adaptation in the Province

Khyber Pakhtunkhwa (KP) is vulnerable to climate change impacts. Climate education is crucial for adaptation.

Policies and Frameworks

KP Climate Change Policy (2016)

The KP Climate Change Policy (2016) emphasizes climate education by integrating it into school curricula (Section 4.2.3), establishing university research centers (Section 5.1.2), and promoting capacity building and public awareness (Sections 6.3.1 and 7.2.2).

KP Environmental Protection Act (2014)

The Khyber Pakhtunkhwa Environmental Protection Act (2014) mandates climate education through public awareness programs (Section 11(1)(c)), curriculum integration (Section 15(2)(d)), and training for stakeholders (Section 20(1)(e).

KP Provincial Disaster Management Authority (PDMA) Act (2012)

The KP PDMA Act (2012) mandates public awareness programs on climate and disaster management (Section 5(1)(f)), collaboration with educational institutions for curriculum development (Section 6(2)(c)), and training centers for stakeholders (Section 12(1)(d)).

The Khyber Pakhtunkhwa Universities Act (2012)

The KP Universities Act (2012) requires universities to promote climate change research (Section 5(1)(v)), establish centers for related education (Section 11(2)(iii)), and develop sustainability-focused curricula (Section 15(1)(vii)).

Institutions

KP Environmental Protection Agency (EPA)

The KP Environmental Protection Agency (EPA) is essential for climate education, conducting public awareness programs (Section 11(1)(c)), collaborating with educational institutions to integrate climate education into curricula (Section 15(2)(d)), and establishing training programs for stakeholders (Section 20(1)(e)).

KP Provincial Disaster Management Authority (PDMA)

The KP Provincial Disaster Management Authority (PDMA) promotes climate education through public awareness programs, collaboration with educational institutions for curriculum development, and the establishment of training centers for stakeholders (Sections 5(1)(f), 6(2)(c), & 12(1)(d)).

Department of Elementary & Secondary Education

The KP E&SE Department is mandated to include climate education in curricula, as stated in Section 10(1)(b) of the Right to Free and Compulsory Education Act (2017), and requires private schools to do the same under Section 12(2)(a) of the Schools and Colleges Registration and Admission Regulation Rules (2020).

Department of Agriculture

The KP Agriculture Department is mandated by law to promote climate education for farmers, focusing on sustainable practices under the Agriculture Produce Marketing Regulatory Authority Act (2016) and soil conservation techniques as required by the Soil Conservation Act (2019).

Department of Higher Education

The KP Higher Education Department advances climate education through legal mandates. The KP Universities Act (2012) requires universities to promote research in environmental science and climate change (Section 5(1)(v)), establish centers for climate change and disaster management (Section 11(2)(iii)), and integrate climate change into curricula (Section 15(1)(vii)).

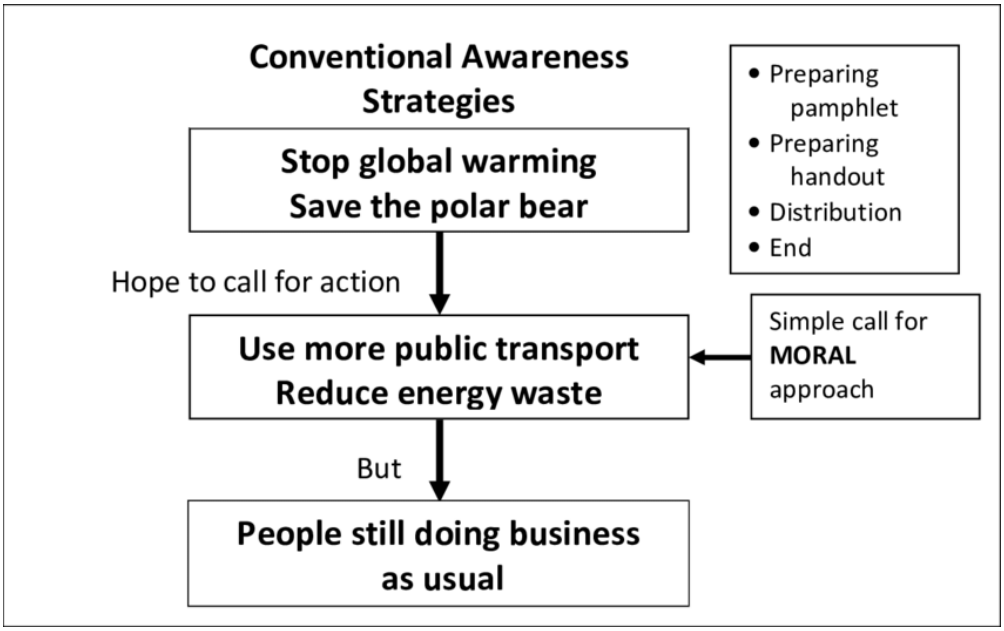
University of Peshawar (Centre for Climate Research)

The University of Peshawar's Centre for Climate Research promotes climate education and research in KP, focusing on interdisciplinary studies and capacity building. It aims to develop climate change mitigation and adaptation strategies.

Projects

Name of Project	Executed by	Funded by	Cost	Duration
KP-RETP	P&D Deptt KP	IFAD	30.265 Billion PKR	2021 on word
BTTP	Environment Deptt KP	Local	13.669 Billion PKR	2019 on word
BTASP	Environment Deptt KP	Local	372 Million PKR	2022 on word
BRT Peshawar	T&MTD KP	Local ADB AFD	70 Billion PKR	2018 on ward
KPIAIP (IDA-Credit)	Agriculture Deptt	World Bank	30.048 Billion PKR	2019 on ward
Climate Resilience through Horticulture Intervention in KP	Agriculture Department	World Bank	778 Million PKR	2022 on ward
GZD Command Area	Agriculture Department	ADP World bank	4.23 Billion PKR	2016 on ward
KP-RISP	P&D Department	Local World Bank	109 Billion PKR	2023 on word
KP-FSSP	Agriculture Department	Local ADB Japan Aid	88 Million USD	2024 on word
KP-RAP	C&W Department	Local World Bank	69.440 Billion PKR	2022 on ward

The Role of Mass Awareness for Climate Change Adaptation



Overview of Mass Awareness in Pakistan

Pakistan is part of the developing world, where around 40% of the population is aware of climate change, compared to developed nations like Japan, the EU, and the USA, where the ratio exceeds 90%. Still, 40% of adults worldwide are unaware of climate change, and this ratio increases to 65% in developing countries (IPRI-2022).

Media Landscape in Pakistan

Print Media

- There are approximately 945 newspapers in the country. The print media is published in 11 languages, with Urdu and Sindhi as the largest language groups.
- Urdu newspapers are dominant in rural areas, while the English media primarily focuses on urban consumers.
- Print media coverage is limited, with some exceptions like Rina Saeed Khan, an environmental journalist who regularly writes about climate issues in *Daily Dawn*.

Electronic Media

- Presently, there are around 142 TV channels and 235 FM radio stations operating in the country, with a viewership of 141 million, consisting of both satellite and terrestrial TV channels.
- Electronic media rarely discusses climate change, except during occasional events like International Days observed for climate change, e.g., Earth Day, Biodiversity Day, etc.

Digital Media/Social Media

- Pakistan has a large internet user base and high mobile phone penetration, with 193.9 million cellular subscribers, of which 127.06 million have 3G/4G access, and 140.7 million have broadband connections.
- Social media has vast potential for rapid information sharing on climate change,

including the internet and cellular phones. Popular applications among new media users include Twitter, Facebook, WhatsApp, and Instagram.

Conventional Media Forums

In addition to this, there are more than 0.8 million mosques, churches, and other religious places in Pakistan, which also serve as media forums for public awareness.

Government Initiatives in the Area of Mass Awareness

- According to the PEMRA Rules 2017, 10% of airtime on all electronic media must be dedicated to public interest messages/awareness. This has set a parameter for the allocation of rates in public sector advertisements under the Advertisement Policy, 2021.
- Earmarking of up to 2.5% of the total budget outlay for advertisement and publicity in PC-1 of the PSDP Projects (Federal Government Direction 2022).

The Role of Federal Institutions in Mass Awareness for Climate Change Adaptation in Pakistan

Pakistan faces significant climate change impacts, necessitating effective adaptation and awareness measures. This analysis examines federal institutions' roles in promoting climate resilience through mass awareness.

Policies and Frameworks

National Climate Change Policy (2012)

The National Climate Change Policy (2012) of Pakistan highlights the need for public awareness on climate change. It mandates public campaigns to educate citizens on its causes and adaptation (Section 4.2.3), integrates climate education into school curricula (Section 5.1.2), and calls for a media cell to share information through various channels (Section 6.3.1).

Framework for Implementation of Climate Change Policy (2014-2030)

The Framework for Implementation of Climate Change Policy (2014-2030) mandates a national climate change awareness strategy (Section 3.2.1) to improve public understanding, integrates climate education into formal and non-formal systems (Section 4.1.3), establishes resource centers for training (Section 5.2.2), and assigns provincial governments to lead public awareness campaigns (Section 6.1.4).

Pakistan's Nationally Determined Contributions (NDCs)

Pakistan's NDCs under the Paris Agreement emphasize mass awareness for climate change mitigation, with Section 4.2.1 highlighting the need for "climate change education and awareness" and Section 5.1.3 calling for "capacity building and training" for stakeholders.

NDMA Act (2010)

The National Disaster Management Act (2010) mandates public awareness for disaster risk reduction, with Section 6(2)(d) requiring the NDMA to educate the public, Section 12(1)(c) allowing the National Executive Committee to launch awareness campaigns, and Section 23(1)(e) directing state governments to incorporate climate change education into school curricula.

Institutions

Ministry of Climate Change
The Ministry of Climate Change is essential for promoting awareness of climate adaptation, as mandated by the Climate Change Act, 2017, which requires it to educate the public (Section 4(2)(d)), conduct awareness campaigns and training (Section 5(1)(c)), and integrate climate education into national curricula (Section 12(1)(e)).

Pakistan Environmental Protection Council (PEPC)
The PEPC promotes mass awareness of climate change, mandated by the Pakistan Environmental Protection Act, 1997, to educate the public (Section 5(1)(c)), conduct awareness campaigns and training (Section 6(2)(d)), and collaborate with educational institutions to integrate climate education into curricula (Section 15(1)(e)).

Global Change Impact Studies Centre (GCISC)
The GCISC promotes climate change awareness in Pakistan, as mandated by the Pakistan Environmental Protection Act, 1997, conducting research (Section 3), disseminating information (Section 5(1)(d)), collaborating with educational institutions (Section 6(2)(e)), and developing public awareness campaigns (Section 12(1)(f)).

National Disaster Management Authority (NDMA)
The NDMA promotes climate change awareness in Pakistan, as mandated by the National Disaster Management Act, 2010, to educate the public on risks (Section 6(2)(d)), conduct awareness campaigns and training (Section 12(1)(c)), and integrate climate education into national curricula (Section 23(1)(e)).

Ministry of Information & Broadcasting
The Ministry of Information and Broadcasting promotes climate change awareness in Pakistan, mandated by the PEMRA Ordinance 2002, to disseminate information on public interest issues (Section 4(2)(e)), produce public service messages (Section 6(1)(c)), and promote climate coverage in the media (Section 10(1)(d)).

Higher Education Commission
The HEC promotes climate change awareness through academia, mandated by the HEC Ordinance 2002, to promote research (Section 3(1)(d)), integrate climate education into curricula (Section 5(1)(e)), and establish research centers (Section 10(1)(f)).

The Role of Khyber Pakhtunkhwa's Institutions in Mass Awareness for Climate Change Adaptation in the Province

Khyber Pakhtunkhwa faces significant climate change impacts. Institutions play a vital role in promoting mass awareness and adaptation

Policies and Frameworks

Khyber Pakhtunkhwa Climate Change Policy 2022

The KP Climate Change Policy 2018 emphasizes mass awareness and education, mandating public education (Section 4.2.3), curriculum integration (Section 5.1.2), resource centers (Section 6.3.1), and awareness campaigns by the provincial government (Section 7.2.2).

Khyber Pakhtunkhwa Climate Change Action Plan

The KP Climate Change Action Plan 2018 prioritizes mass awareness, mandating public education (Section 3.2.1), the development of educational materials (Section 4.1.3), training programs for stakeholders (Section 5.2.2), and awareness campaigns by the provincial government (Section 6.1.1).

Provincial Environmental Protection Act 2014

The KP Environmental Protection Act (2014) mandates climate change awareness, empowering the Provincial Environmental Protection Agency to educate the public (Section 6(2)(c)), conduct campaigns (Section 10(1)(d)), integrate education into schools (Section 15(2)(b)), and require industries to run awareness programs (Section 22(1)(e)).

PDMA Act (2012)

The KP PDMA Act (2012) prioritizes climate change awareness, mandating the PDMA to educate the public on risks (Section 12(1)(c)), conduct media campaigns (Section 15(2)(b)), and integrate climate education into school curricula (Section 20(1)(d)).

Institutions

Forestry, Environment & Wildlife Department

The KP Forestry, Environment & Wildlife Department's climate change awareness efforts are mandated by the Khyber Pakhtunkhwa Environmental Protection Act (2014), empowering it to educate the public (Section 6(2)(c)), integrate education into school curricula (Section 12(1)(e)), and conduct media campaigns (Section 15(2)(b)).

Provincial Climate Change Implementation Committee

The KP Provincial Climate Change Implementation Committee, under the Climate Change Act (2022), is mandated to disseminate information (Section 7(1)(d)), conduct public campaigns (Section 10(2)(e)), and collaborate with educational institutions on climate education (Section 14(1)(f)).

Environmental Protection Agency Khyber Pakhtunkhwa (EPA KP)

The KP Environmental Protection Agency (KP EPA) promotes climate change awareness under the Environmental Protection Act (2014) by conducting public campaigns (Section 6(2)(c)), integrating climate education into curricula (Section 12(1)(e)), and collaborating with media (Section 15(2)(b)).

PDMA KP

The KP PDMA promotes climate change awareness under the Disaster Management Act (2010) by conducting public campaigns (Section 12(1)(c)), collaborating with educational institutions and media (Section 14(2)(e)), and developing climate contingency plans (Section 18(1)(f)).

Khyber Pakhtunkhwa Agriculture Department

The KP Agriculture Department promotes climate awareness through laws mandating sustainable farming (Section 4(2)(d)), farmer education on soil conservation (Section 7(1)(e)), and climate-resilient water management (Section 10(2)(f)).

Comparative Study of Pakistan and India Regarding Capacity Building, Climate Education, and Mass Awareness for Climate Change Adaptation

Pakistan and India, neighboring countries in South Asia, face similar climate change challenges. The following table compares the role of government institutions in capacity building, climate education, and mass awareness for adaptation in both countries.

Aspect	Pakistan	India
Institutional Framework	• Ministry of Climate Change (MoCC) • National Disaster Management Authority (NDMA) • Pakistan Environmental Protection Agency (EPA) • Provincial climate change departments • Provincial Climate Change Implementation Committees	• Ministry of Environment, Forest and Climate Change (MoEFCC) • National Disaster Management Authority (NDMA) • State Climate Change Departments • National Institute of Disaster Management (NIDM) • National Clean Energy and Environment Fund (NCEEF) • Indian Meteorological Department (IMD)
Initiatives for Capacity Building, Climate Education & Mass Awareness	• Training programs for government officials • Climate change research and development • Community-based adaptation projects • International collaborations (e.g., UNDP, World Bank) • Climate Change Research and Development (CCRD) program • Climate Change Adaptation and Resilience (CCAR) project • National Climate Change Knowledge Portal • Climate Change Education and Awareness (CCEA) program • Mass Awareness Campaigns • Provincial Climate change policies	• National Action Plan on Climate Change (NAPCC) • State Action Plans on Climate Change (SAPCC) • Climate Change Knowledge Portal • Training programs for officials and communities • National Climate Change Research Program • Climate Change Adaptation Program
Challenges	• Limited funding	• Implementation gaps

	• Institutional capacity gaps • Coordination issues	• Funding constraints • State-level capacity building
Differences	• Pakistan's institutional capacity is limited • Institutional structure and scope • Funding mechanisms	• India's NAPCC and SAPCC provide a comprehensive framework • India's climate change knowledge portal is a best practice
Similarities	• Both countries have dedicated climate change ministries • National disaster management authorities play key roles • Emphasis on community-based adaptation	

Gap Analysis of Pakistan and India Regarding Capacity Building, Climate Education & Mass Awareness for Climate Change Adaptation

The gap analysis identifies the gaps in capacity building, climate education, and mass awareness for climate change adaptation in Pakistan and India, highlighting areas for improvement.

GAP	Pakistan	India
Institutional Gaps	• limited institutional capacity (human resources, expertise) • lack of coordination among ministries and departments. • Insufficient funding for climate education initiatives	• limited capacity for climate change research and development. • Insufficient funding for climate education initiatives
Capacity Building, Mass Awareness & Climate Education Gaps	• limited training programs for teachers and educators • inadequate climate change research and development • Insufficient community engagement and awareness	• Limited training programs for state and local officials • Inadequate community engagement and awareness • Limited private sector engagement
Policy and Framework Gaps	• lack of comprehensive climate change education policy • insufficient integration of climate change into school curricula • limited international cooperation	• limited integration of climate change into sectoral policies • insufficient monitoring and evaluation of climate education initiatives • limited international cooperation.
Common Gaps	• Limited funding for climate education initiatives • Insufficient community engagement and awareness • Limited capacity for climate change research and development	

Current Situation	
Pakistan	**India**
• Limited awareness among general public (30% awareness rate) • Insufficient climate change education in schools • Inadequate media coverage	• Moderate awareness among general public (50% awareness rate) • Climate change education integrated into school curricula • Significant media coverage
Desired Situation	
Pakistan	**India**
• 80% awareness rate among general public • Comprehensive climate change education in schools • Regular media coverage and public awareness campaigns	
GAP	
Pakistan	**India**
• Awareness gap: 50% (30% current vs. 80% desired) • Education gap: Climate change education not integrated into school curricula • Media gap: Inadequate media coverage	• Awareness gap: 30% (50% current vs. 80% desired) • Implementation gap: Climate change education not uniformly implemented • Funding gap: Insufficient funding for public awareness campaigns

GAP Analysis Table

Category	Pakistan	India	Common GAPs
Institutional	40 %	30 %	Limited funding
Capacity Building	30 %	25 %	Insufficient community engagement
Policy & Frame Work	30 %	45 %	Limited international cooperation

Prioritization Matrix

Gap	Priority	Recommendation
Institutional capacity	High	Strengthen institutional capacity
Funding	High	Increase funding for climate change initiatives
Community engagement	Medium	Increase community engagement and awareness
Research and development	Medium	Enhance capacity for climate change research and development

PESTEL Analysis

The PESTEL Analysis focuses on the situation of capacity building, climate education, and mass awareness regarding climate change adaptation in Pakistan. The details are as follows:

Political

1. Government support: Climate change policies and initiatives demonstrate government commitment.
2. International agreements: Pakistan's ratification of the Paris Agreement and UNFCCC commitments guides climate action.
3. Regulatory frameworks: The Climate Change Act (2017) provides a legal framework.
4. Policy stability: Political changes impact climate policy continuity.

Economic

1. Funding: Insufficient allocation hinders climate initiatives.
2. Economic benefits: Climate-resilient infrastructure drives economic growth.
3. Cost of adaptation: Climate change impacts burden the economy.
4. Resource allocation: Climate initiatives compete for resources.

Social

1. Public awareness: Growing concern about climate change drives action.
2. Community engagement: Local involvement in climate initiatives enhances ownership.
3. Cultural sensitivity: Climate education is tailored to the local context.
4. Demographic changes: Population growth amplifies climate impacts.

Technological

1. Climate modeling: Advanced technologies enhance climate research.
2. Renewable energy: Solar, wind, and hydroelectric power reduce emissions.
3. Digital resources: Online climate education platforms expand access.
4. Innovative solutions: Climate-resilient infrastructure mitigates impacts.

Environmental

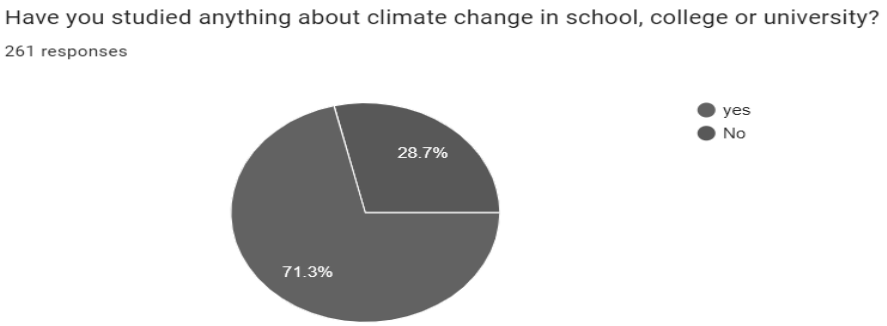
1. Climate change impacts: Pakistan's vulnerability to extreme events.
2. Natural resources: Sustainable management is essential.
3. Disaster risk reduction: Climate-resilient infrastructure is necessary.
4. Ecosystem services: Protection of biodiversity is crucial.

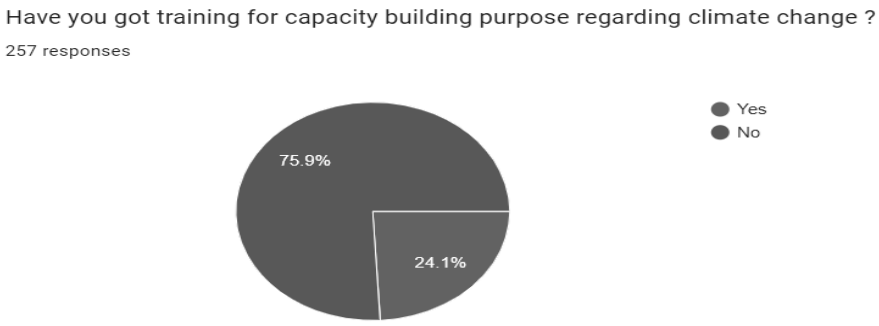
Legal

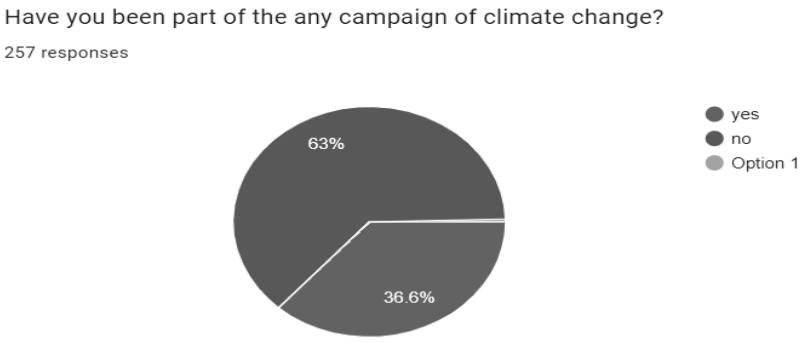
1. Climate change laws: Compliance with international agreements.
2. Policy frameworks: National and provincial climate policies guide action.
3. Regulatory enforcement: Implementation of climate laws is essential.
4. International cooperation: Collaboration on climate change.

STATISTICAL ANALYSIS

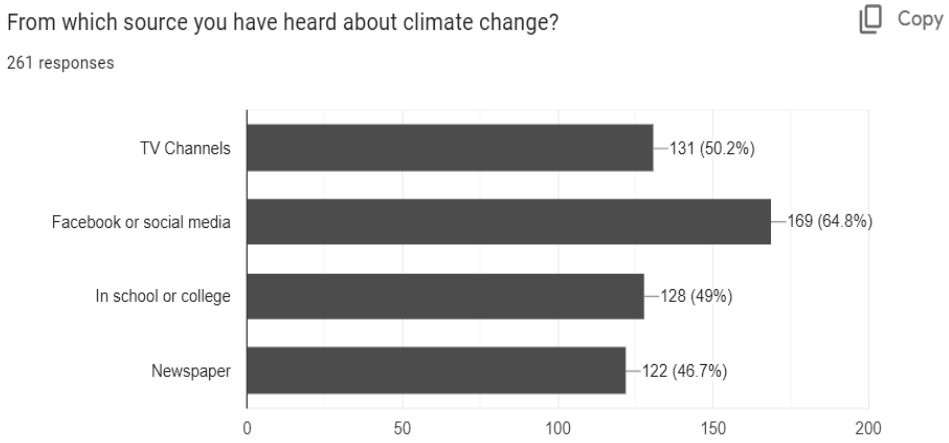
A survey was conducted through Google Forms to gather feedback from the general public regarding capacity building, climate education, and mass awareness for climate change adaptation. The analysis is as follows:







Issues and Challenges



Capacity Building Challenges

- **Limited Institutional Capacity**
  - **Lack of Skilled Personnel:** The lack of trained climate change professionals in government and NGOs undermines the effectiveness of climate programs, resulting in poor responses to environmental challenges.
  - **Insufficient Training Programs:** Current capacity-building initiatives inadequately train staff, hindering their ability to effectively tackle complex climate issues.
- **Resource Constraints**
  - **Financial Limitations:** Limited budget allocations in the environmental sector restrict essential training and educational activities, undermining the development of impactful climate capacity programs.
  - **Inadequate Infrastructure:** Insufficient physical and technological infrastructure limits the effectiveness of capacity-building programs, preventing stakeholders from accessing vital training resources.
- **Coordination Issues**
  - **Fragmented Approach:** Lack of coordination among agencies leads to overlapping efforts that weaken climate change capacity-building initiatives.
  - **Poor Communication Channels:** Poor communication among stakeholder's limits collaboration and impedes progress in capacity-building efforts.

Climate Education Challenges

- **Curriculum Gaps**
  - **Inadequate Integration of Climate Education:** Many educational institutions neglect to include climate change topics in their curricula, leading to a lack of awareness among future decision-makers.
  - **Limited Resources for Educators:** Teachers often lack resources and training for effective climate education, limiting the quality of students' learning on the subject.
- **Public Awareness**
  - **Low Public Awareness:** A lack of public awareness about climate change hinders meaningful community engagement and minimizes participation in initiatives.

- **Ineffective Communication Strategies:** Current communication strategies fail to reach marginalized communities affected by climate change, limiting the impact of awareness campaigns.

- **Engagement with Educational Institutions**
  - **Limited Collaboration with Schools and Universities:** Insufficient collaboration between environmental agencies and educational institutions undermines effective climate education initiatives.

- **Mass Awareness Challenges**

  - **Inconsistent Messaging**
    - **Mixed Messages from Authorities:** Inconsistent messaging on climate change from various entities confuses the public and undermines the effectiveness of awareness campaigns.
  - **Resource Allocation**
    - **Insufficient Funding for Awareness Campaigns:** Limited funding for mass awareness campaigns restricts their ability to effectively reach broader audiences.
  - **Cultural Barriers**
    - **Resistance to Change:** Cultural beliefs can resist climate change initiatives, necessitating tailored approaches that align with local values to promote sustainability.
    - **Socioeconomic Factors:** Vulnerable communities often prioritize immediate economic concerns over long-term environmental issues, leading to resistance against climate education initiatives.

Conclusion

The effective management of climate change in Khyber Pakhtunkhwa hinges on overcoming significant issues related to Capacity Building, Climate Education, and Mass Awareness. The current landscape reveals gaps in skilled personnel, financial resources, and institutional coordination, all of which impede the development of a comprehensive climate response. Furthermore, the lack of integration of climate-related topics in educational curricula limits public understanding and engagement. Mass awareness campaigns face challenges such as inconsistent messaging and cultural resistance, which can undermine public support for climate initiatives. To address these multifaceted challenges, it is crucial for government agencies, educational institutions, and community organizations to collaborate closely, ensuring the design and implementation of inclusive and effective strategies. By investing in targeted capacity-building programs, enhancing climate education in schools, and promoting cohesive awareness campaigns, KP can foster a more resilient and proactive society capable of tackling the ongoing and future impacts of climate change.

Recommendations & Way Forward

Based on the identified issues and challenges regarding Capacity Building, Climate Education, and Mass Awareness in Khyber Pakhtunkhwa (KP), the following recommendations and strategies are proposed to enhance the province's response to climate change:

Recommendations and Way Forward

- **Strengthening Capacity Building**
  - **Develop Comprehensive Training Programs:** Create targeted training programs on climate change for officials and leaders, collaborating with academic and international organizations to enhance effectiveness.
  - **Enhance Recruitment and Retention Strategies:** Implement policies that offer competitive salaries and professional development to attract and retain skilled personnel in environmental sectors.
- **Improving Resource Allocation**
  - **Increase Budget Allocations:** Push for increased budget allocations for climate education and capacity-building by emphasizing their long-term benefits to policymakers.
  - **Leverage Public-Private Partnerships:** Encourage partnerships among government, the private sector, and NGOs to pool resources and expertise for sustainable climate action.
- **Enhancing Climate Education**
  - **Integrate Climate Change into Curricula:** Work with educational authorities to integrate climate change topics into curricula at all levels, ensuring expert input for comprehensive environmental education.
  - **Provide Training and Resources for Educators:** Equip teachers with training and resources through professional development workshops to effectively teach climate-related subjects.
- **Boosting Mass Awareness Efforts**
  - **Develop Consistent Messaging Campaigns:** Establish a cohesive communication strategy to ensure consistent climate change messaging across diverse media and to target various demographics.
  - **Engage Communities through Local Initiatives:** Encourage community involvement in climate action through local awareness campaigns and participatory activities to enhance the effectiveness of mass awareness initiatives.
- **Fostering Collaboration and Coordination**
  - **Establish Multi-Stakeholder Platforms:** Create collaborative platforms for government, educational institutions, NGOs, and communities to share knowledge and resources on climate change through regular workshops.
  - **Enhance Communication Channels:** Utilize technology to streamline communication and coordination among stakeholders for enhanced climate resilience.

- **Monitoring and Evaluation**
  - **Implement Robust Monitoring Frameworks:** Establish a comprehensive monitoring and evaluation framework to assess the effectiveness of climate initiatives and drive continuous improvement.
  - **Utilize Data for Informed Decision-Making:** Improve climate data accessibility in KP to inform policy and program development.

Log Framework

In order to implement the recommendations, the following log framework is proposed:

LOG FRAME WORK			
Activity	Action by	Timeline	Cost PKR (M)
Strengthening Capacity Building of the policy makers and field staff	PDMA, EPA,	Short & Medium	Regular Activity
Boosting Mass Awareness Efforts **Ring tone Generation:**	PTA, Info. Deptt, Envt Deptt, EPA, PDMA	Short term (occasional)	Regular Activity
Conduct research for the use of Artificial Intelligence	NDMA/PDMA, Envt Dept, EPA & P&D Deptt	Medium term	Project (PSDP & ADP)
Introducing On line training	PDMA, Envt dept. EPA KP	Short term (occasional)	Regular Activity
Encourage and facilitated the Academia/research on the scientific dimension of climate change	HED and Universities	Long Term	Project (PSDP & ADP)

References

1. Ali, T., & Hussain, M. (2023). Community engagement in climate adaptation: A case study from Khyber Pakhtunkhwa, Pakistan. Environmental Science & Policy, 145, 197-205. https://doi.org/10.1016/j.envsci.2023.05.004

2. Ahmed, N., & Ali, S. (2023). Climate education in Pakistan: Bridging the gap between policy and practice in Khyber Pakhtunkhwa. Environmental Education Research, 29(5), 641-657. https://doi.org/10.1080/13504622.2023.2205256

3. Ahmed, S., & Khan, M. (2018). Climate change adaptation: A community-based approach in Khyber Pakhtunkhwa, Pakistan. Journal of Environmental Management, 227, 227-235. https://doi.org/10.1016/j.jenvman.2018.08.061

4. Bashir, S., & Malik, A. (2023). Assessing the role of local NGOs in climate change awareness and education in Khyber Pakhtunkhwa. Journal of Environmental Management, 328, 116859. https://doi.org/10.1016/j.jenvman.2023.116859

5. Khan, H., & Raza, S. (2023). Climate change impacts on agriculture: A case study from Khyber Pakhtunkhwa, Pakistan. Sustainability, 15(2), 974. https://doi.org/10.3390/su150200974

6. Khan, M. A., & Bakhsh, K. (2020). Climate change and its socio-economic impacts in Pakistan: Evidence from Khyber Pakhtunkhwa. Pakistan Journal of Agricultural Economics, 3(1), 1-15. https://doi.org/10.21776/ub.2042-3928.2020.3.1.1

7. Khan, S. (2021). Public perceptions of climate change in Khyber Pakhtunkhwa: A survey-based analysis. Journal of Environmental Management, 284, 111920. https://doi.org/10.1016/j.jenvman.2021.111920

8. Khan, N., & Bukhari, A. (2023). The role of higher education institutions in climate change education in Pakistan: Challenges and opportunities. Journal of Environmental Education, 54(2), 100-115. https://doi.org/10.1080/00958964.2023.2202149

9. Mansoor, S., & Shah, M. (2023). Assessing the effectiveness of climate awareness campaigns in Khyber Pakhtunkhwa. Journal of Environmental Management, 319, 115786. https://doi.org/10.1016/j.jenvman.2023.115786

10. Panjwani, A. (2018). Climate education in Pakistan: Challenges and opportunities. Pakistan Journal of Education, 35(1), 17-29.

11. Panjwani, A., & Zafar, M. (2023). Community-based adaptation strategies to climate change in Khyber Pakhtunkhwa: A focus on education and awareness. Environmental Science & Policy, 147, 207-215. https://doi.org/10.1016/j.envsci.2023.06.005

12. Pakistan Environmental Protection Agency (EPA). (2021). Khyber Pakhtunkhwa Environmental Protection Act.

13. Pakistan Green Climate Fund (GCF). (2018). GCF Country Programme for Pakistan: Climate change adaptation and mitigation.

14. Pakistan Institute of Development Economics (PIDE). (2019). Climate change, disaster risk reduction and development: Policy framework for Pakistan.

15. Pakistan Meteorological Department (PMD). (2020). Climate Change in Pakistan: A

report on climate impacts and adaptation.

16. Rehman, S. U., & Jabeen, S. (2020). The role of media in climate change awareness in Pakistan: A case study of Khyber Pakhtunkhwa. Journal of Media and Communication Studies, 12(1), 1-10. https://doi.org/10.5897/JMCS2020.0806

17. Raza, A., & Zia, H. (2021). Role of educational institutions in enhancing climate resilience in Pakistan: Case study of Khyber Pakhtunkhwa. Journal of Environmental Education Research, 27(2), 135-150. https://doi.org/10.1080/13504622.2020.1846653

18. Sadiq, M., & Ali, F. (2019). Integrating climate change into higher education in Pakistan: Challenges and pathways. Asian Journal of Environment and Ecology, 8(4), 1-8. https://doi.org/10.9734/ajee/2019/v8i430121

19. Saeed, A., & Ahmad, A. (2023). Exploring the link between climate change awareness and community resilience in Khyber Pakhtunkhwa, Pakistan. Journal of Environmental Psychology, 87, 102445. https://doi.org/10.1016/j.jenvp.2023.102445

20. Saeed, M., & Batool, S. (2019). Community-based adaptation to climate change in Khyber Pakhtunkhwa: Opportunities and challenges. Journal of Environmental Studies and Sciences, 9(3), 296-304. https://doi.org/10.1007/s13412-019-00527-4

21. Saeed, M., & Nadeem, M. (2023). Integrating climate change into local governance: Lessons from Khyber Pakhtunkhwa, Pakistan. Urban Climate, 53, 101435. https://doi.org/10.1016/j.uclim.2023.101435

22. Shah, S., & Khan, I. (2023). The role of education in promoting climate resilience in Pakistan: Insights from Khyber Pakhtunkhwa. Journal of Cleaner Production, 383, 135389. https://doi.org/10.1016/j.jclepro.2022.135389

23. Shahbaz, M., & Ali, S. (2023). Climate education and sustainable development in Pakistan: A focus on Khyber Pakhtunkhwa. Sustainable Development, 31(1), 18-29. https://doi.org/10.1002/sd.2338

24. UNDP Pakistan. (2023). Pakistan Climate Change Impact Assessment Report.

25. UNESCO Pakistan. (2023). Education for Sustainable Development in Pakistan: A Framework for Action.

26. World Bank Group. (2023). Pakistan: Climate Adaptation and Resilience Building in the Water Sector.

27. World Resources Institute (WRI). (2018). Creating climate-resilient cities: Best practices and case studies from Pakistan.

28. Zafar, A. (2020). Enhancing climate resilience through education: The role of teachers in Pakistan. Journal of Environmental Education, 51(2), 82-95. https://doi.org/10.1080/00958964.2020.1743078

29. Zafar, A., & Khan, I. (2023). Youth engagement in climate action: A study of Khyber Pakhtunkhwa. Environmental Education Research, 29(3), 275-290. https://doi.org/10.1080/13504622.2023.2201156

30. Zia, H., & Khan, M. A. (2023). Public engagement in climate change adaptation: Evidence from Khyber Pakhtunkhwa. Global Environmental Change, 79, 102233.

https://doi.org/10.1016/j.gloenvcha.2023.102233

31. Zia, M. F., & Iqbal, A. (2020). The role of local communities in climate change adaptation in Khyber Pakhtunkhwa, Pakistan. Sustainability, 12(4), 1405. https://doi.org/10.3390/su12041405

32. Zubair, M., & Bukhari, A. (2023). Climate change policy implementation in Khyber Pakhtunkhwa: Challenges and opportunities. International Journal of Climate Change Strategies and Management, 15(3), 320-335. https://doi.org/10.1108/IJCCSM-12-2022-0223