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IBA PRC Population Research Center

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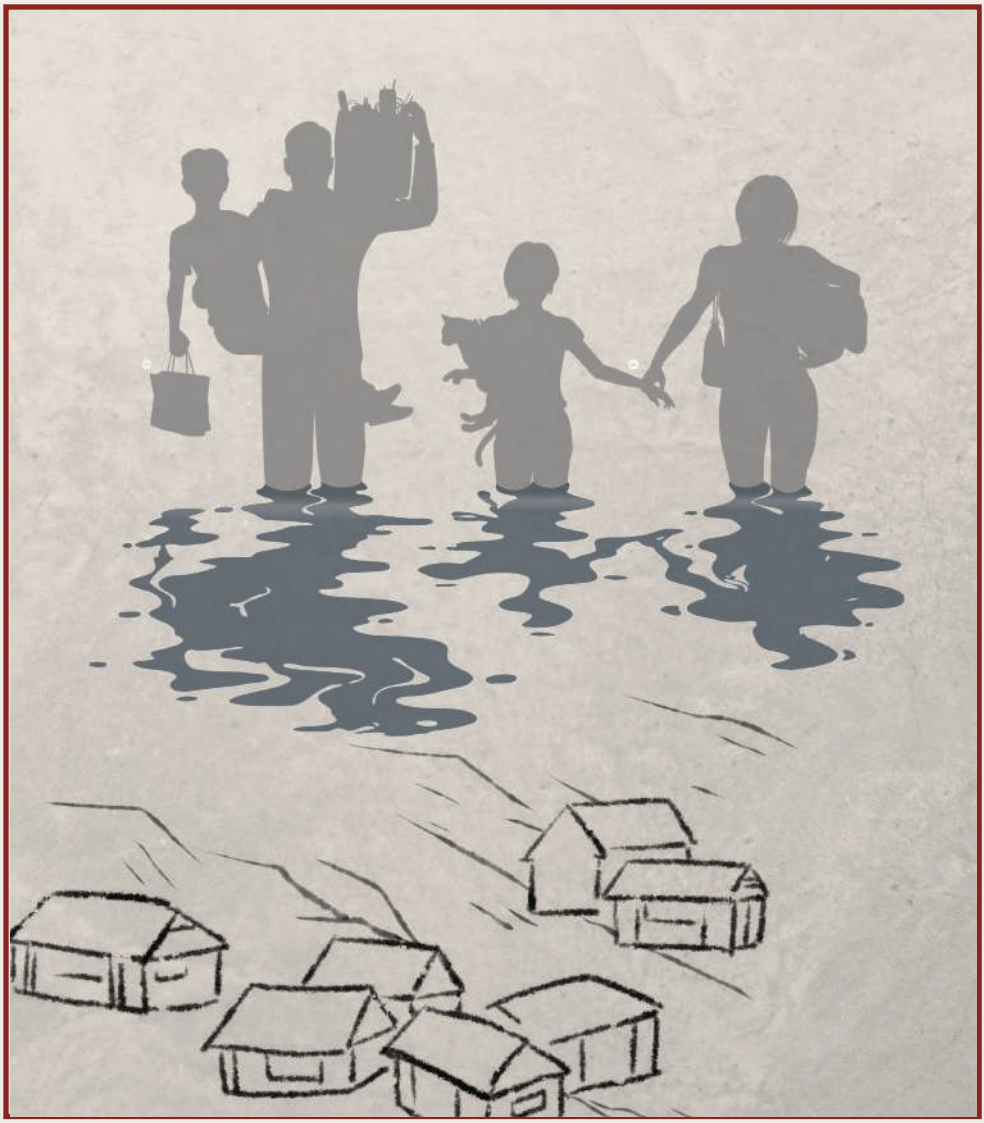
POPULATION BULLETIN

POPULATION RESEARCH CENTRE, IBA SESS

WHAT'S INSIDE THIS ISSUE:



Edited By: Neelma Faraz

NEWS FROM THE OFFICE OF PRC

Webinar: Machine Learning Methods for Analyzing the Utilization of Science in Policy

On March 13th, 2025, the "Webinar: Utilization of Science in Policy" was held as part of our ongoing series, where we invite international scholars to share the latest trends in population research. This session featured Mr. Basil Mahfouz, from University College London (UCL), Department of Science, Technology, Engineering, and Public Policy.

In his presentation, Mr. Mahfouz emphasized the complexity of integrating scientific knowledge into policy frameworks, particularly the challenges posed by communication gaps, differing priorities, and the difficulties in translating academic findings into actionable policy. He also highlighted how machine learning can help identify patterns in policymaking and assist researchers in understanding the disconnect between science and its real-world applications.

The event provided valuable insights into how machine learning and other computational tools can be leveraged to improve the understanding of science-policy integration, encouraging attendees to consider new approaches to research and policy development.

Climate Dialogue – Climate, Health & Population Vulnerability

On May 27th, 2025, the Population Research Centre (PRC) at IBA Karachi, in collaboration with the Karachi Urban Lab, convened the first round of its Climate Dialogue Series, titled “Climate, Health & Population Vulnerability,” at the IBA City Campus.

Dr. Khadija Bari, Director PRC, opened the discussion and co-moderated the session alongside Mr. Mohammad Toheed. Speakers included Yasir Hussain (Climate Action Centre), Saad Aslam (Karachi Times), and Dr. Mehtab Karim (President, Population Association of Pakistan), along with participants from academia, NGOs, and media. The dialogue focused on how climate stressors are impacting public health systems and disproportionately affecting vulnerable groups, especially women, children, and the urban poor. The session concluded with a call for inclusive, evidence-based, and people-centered climate adaptation policies, emphasizing civil society engagement and stronger links between research and policymaking.

Engagement with the Population Welfare Department, Sindh

Team PRC held a meeting with the Population Welfare Department, Government of Sindh, to discuss potential avenues for collaboration. The discussions focused on exploring joint initiatives in research & capacity-building that could support evidence-based policymaking and address pressing population challenges in the province. This engagement reflects PRC's commitment to fostering institutional linkages at both national and international levels, and to working with diverse partners on issues central to population and development.

Research Publication

PRC officials are actively engaged in high quality research. Their works spans various disciplines aiming to drive policy change and improve the societal wellbeing.

- Dr. Lubna Naz's study "Mapping the Climate Risk Landscape of the Diamer–Basha Dam in Pakistan: A Storyline Approach" investigates the interplay of development, financial mismanagement, and climate vulnerability surrounding Pakistan's flagship dam project. Drawing on fieldwork and collaboration with ICIMOD and local communities, the research highlights how compensation for displaced households was often misused—on luxury items, weapons, and costly marriages—leaving families more insecure. It also documents a 24% increase in very high-risk zones (2000–2020), flash floods, deforestation, and water scarcity that further undermine livelihoods. The study emphasizes the importance of integrating financial literacy, climate risk assessment, and sustainable resettlement into large-scale infrastructure planning to balance development goals with community resilience. The paper is available at https://doi.org/10.1111/1477-8947.70001

- Team PRC is proud to contribute to advancing knowledge on child wellbeing in Pakistan through the co-authored chapter "Child Marriage and Its Effect on Maternal and Child Health in Pakistan" by Dr. Khadija Bari, Fatima Sadik, and Neelma Faraz.

Published in Springer's volume Research and Reflections on Child Wellbeing in Pakistan, the chapter critically examines how early marriage exacerbates adverse maternal and child health outcomes, with a focus on regional disparities, socioeconomic determinants, and gendered vulnerabilities. By providing evidence-based insights, this work underscores PRC's commitment to producing research that informs policy, fosters awareness, and addresses the long-term consequences of harmful social practices.

Training & Capacity Building

Members of team PRC had the opportunity to attend two significant training sessions aimed at enhancing the skills in data interpretation visualization and application to policy making

Data Visualization using Power BI

The first session, titled "Persuading with Data," was held in Islamabad from 8–12 September. This five-day workshop focused on data visualization and storytelling, emphasizing the critical skills needed to transform complex statistics into clear and compelling narratives. Under the guidance of expert trainers, participants learned to use cutting-edge tools such as Power BI, which are essential for creating impactful data visualizations that can effectively inform and guide policy decisions.

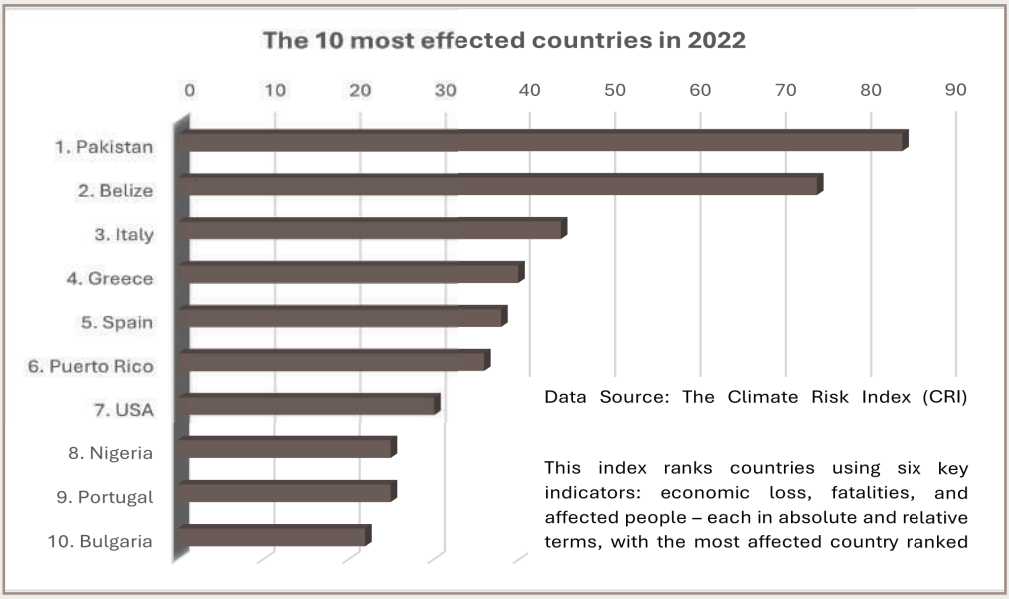
Research Methodology Workshop

The second, was a three-day training workshop on research methodology organized by the National Institute of Population Studies (NIPS) from 23–25 September in Quetta. The workshop aimed to strengthen research capacity in population and development studies, combining theoretical foundations with practical applications such as data analysis using R and academic writing. This initiative provided a valuable platform for enhancing methodological skills and fostering knowledge exchange among researchers and practitioners.

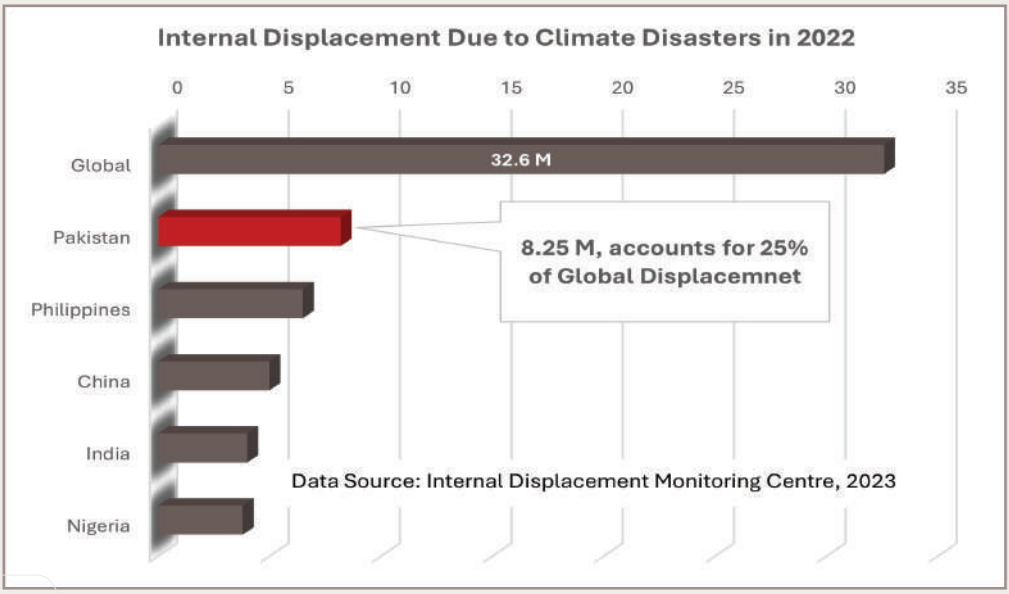
Climate-Induced Migration in Pakistan: Challenges, and the Road Ahead

By: Team PRC

Pakistan consistently ranks among the world's most climate-vulnerable countries. Over the past two decades, the nation has experienced recurrent heatwaves, glacier melt, erratic monsoons, and catastrophic floods. These events have not only devastated ecosystems and infrastructure but have increasingly forced communities to migrate—temporarily or permanently. Between 1999 and 2023, Pakistan was struck by over a hundred major weather-related events, with escalating human and economic costs.



Globally, the World Bank estimates that over 216 million people could be internally displaced due to climate change by 2050, with South Asia emerging as one of the most affected regions. Within this context, Pakistan is on the frontlines. Climate-induced migration is rarely the result of environmental shocks alone; it is shaped by the interaction between climatic hazards, eroding livelihoods, weak infrastructure, and institutional capacity. In rural regions, failed crops, water scarcity, and salinization intensify "push" factors, while urban centers, despite their own pressures, exert "pull" through economic opportunities and social networks.



The monsoon floods of June–October 2022 were catastrophic. They affected approximately 33 million people, displaced over 8 million internally, destroyed or damaged more than 2.1 million homes, and severely disrupted food, water, healthcare, and education systems. Recent torrential rains in June 2025 and subsequent events underscore that these are not isolated incidents. Damage assessments are often incomplete, return is insecure, especially where land tenure is unclear or infrastructure remains unrepaired. What might begin as temporary displacement too often settles into permanent dislocation.

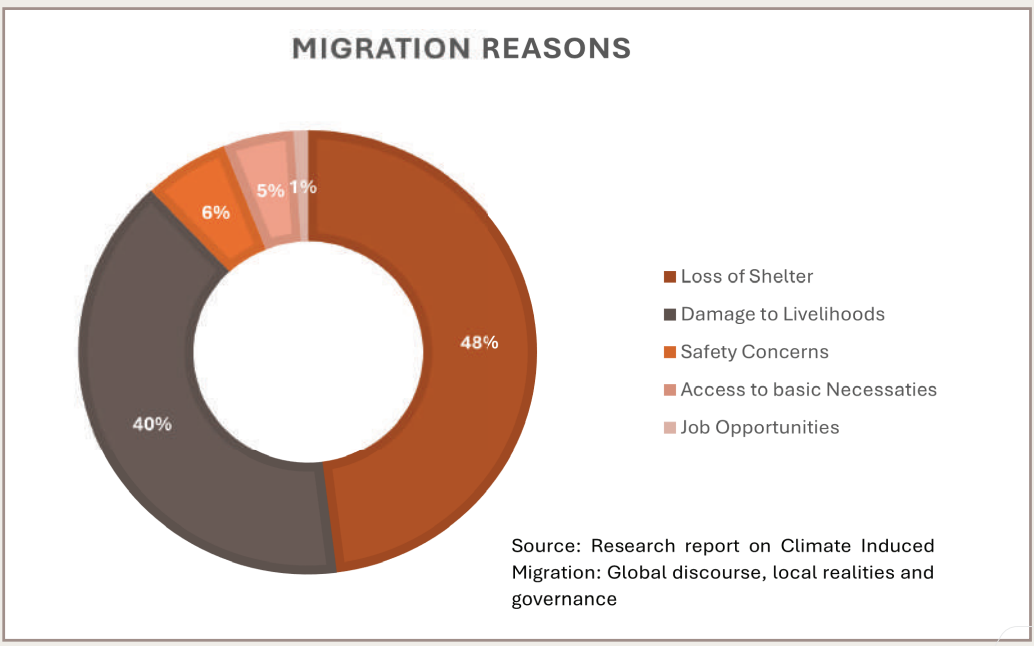
Migration Patterns and Projections

By 2050, analysts estimate that up to 2 million internal climate migrants may emerge in Pakistan, with urban centers like Karachi, Lahore, Rahim Yar Khan, and Quetta absorbing the majority. Key movement patterns include:

- **Internal Migration:** Large-scale ruraltourban shifts from Sindh, Balochistan, South Punjab.
- **Seasonal Migration:** People leave during droughts or crop failures, returning later if conditions improve.
- **Temporary vs Permanent:** The lack of return incentives, persistent risk, and institutional weakness often mean temporary moves become permanent.

Migration Pattern	Movers	Duration	Destinations	Return Likelihood
Permanent	Whole households	Years or longer	Urban peripheries	Low
Temporary	Partial/whole families	Weeks to months	Camps, relatives	Medium
Seasonal	One or two earners	Seasonal/months	Work areas, farms, cities	High (intended)

Displaced households face multi-layered challenges. Surveys from flood-affected communities in Sindh, Balochistan, and Khyber Pakhtunkhwa show that nearly half of the respondents identified loss of shelter as their primary driver of migration, while others pointed to livelihood destruction, lack of basic services, and safety concerns.



Source: Research report on Climate Induced Migration: Global discourse, local realities and governance

Challenges Faced by Displaced Populations

Those displaced face a range of overlapping challenges:

- **Housing Insecurity:** Many lose their homes or cannot afford safe housing.
- **Livelihood Disruption:** Agricultural losses, loss of employment, reliance on aid or informal work.
- **Education Interruption:** Displacement leads to school dropouts and long-term education loss.
- **Social Marginalization:** Migrants are often excluded from public services; social stigma persists.
- **Psychological Strain:** Trauma, loss, uncertainty, and eroded social networks.

Gendered Vulnerabilities

Women, girls, and children are disproportionately affected:

- **Health:** Maternal health, reproductive care, and access to clean water/sanitation are compromised.
- **Nutrition:** Food insecurity rises, especially where male earners are displaced.
- **Education:** Girls often drop out more than boys postdisplacement.
- **Protection:** Increased risk of genderbased violence, especially in temporary shelters or weakly governed areas.

Policy Recommendations

To address climate-induced displacement effectively, Pakistan should:

- **Distinguish Displacement Types:** Temporary vs permanent, seasonal vs forced — policies should be targeted accordingly.
- **Strengthen Urban Reception Systems:** Upgrade infrastructure, services, housing in cities receiving displaced populations.
- **Implement GenderSensitive Responses:** Ensure protection, health, shelter with attention to women, children, and marginalized groups.
- **Build Resilience in Source Areas:** Invest in climateresilient agriculture, diversified livelihoods, flood mitigation, early warning systems.
- **Improve Data Systems:** Realtime, disaggregated, spatially explicit data on displacement, damage, return are crucial for planning.

Conclusion

Climate induced migration in Pakistan is no longer a future concern — it is already reshaping lives, landscapes, and policy priorities. With Pakistan accounting for a quarter of global internal displacements due to climate disasters in 2022, the scale is stark. Without robust investment in resilience, rights, and inclusive recovery, temporary displacement risks becoming permanent exclusion. The urgency is clear: policies, planning, and partnerships must catch up to this evolving reality.

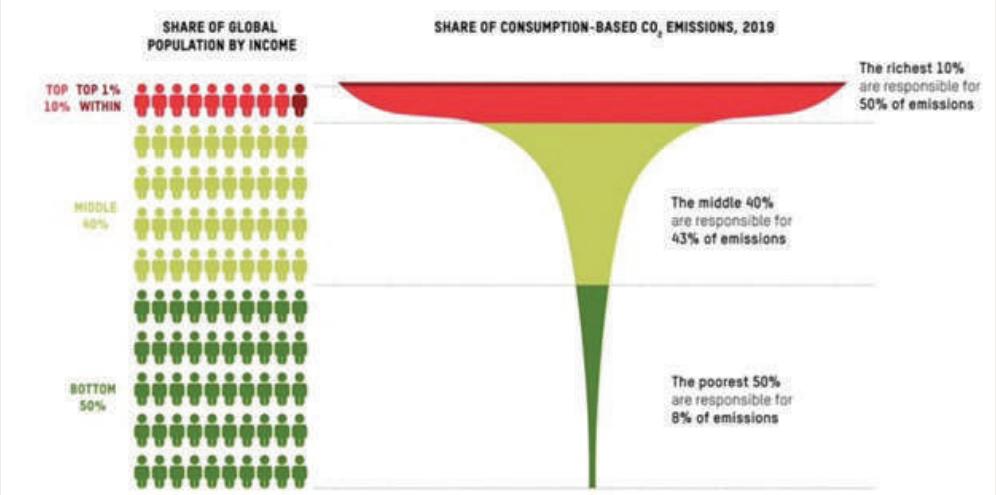
Student Corner

Climate-Induced Supply Shocks: A Compounding Crisis

By: Khanzaib Ahmad

Introduction

Climate-induced shocks are no longer anomalies but the new norm—disrupting economy, ecology, and human capital. The great tragedy in terms of climate change lies in its injustice: despite contributing less than 1% to global greenhouse gas emissions, Pakistan faces some of the harshest consequences globally. This imbalance calls for an urgent reassessment of global responsibilities, national preparedness, and a financial framework that can support resilience in vulnerable countries, especially when they are not the actual disrupters.



Source: https://ccpi.org/historical-responsibility-for-the-climate-crisis-the-roots-of-the-unfair-imbalance/

The increasing unpredictability of climate patterns has begun to disrupt Pakistan's traditional development planning cycles. Disruptions in the production of food, energy, and raw materials increase inequality and exacerbate existing regional disparities. The burden of these shocks is borne unequally, falling hardest on women, children, and marginalized rural populations who lack the resources to forebear such hardships. The cascading effects of these disruptions spread through education, public health, and employment, weakening the country's human capital and causing great harm to the long-term productive capacity building process. Therefore, the crisis is not simply about nature turning volatile—it is about a greater chunk of society becoming systematically fragile. Tackling climate-induced shocks must become a central priority in both national policy discourse and international development assistance.

Economic Consequences of Climate Shocks

Climate events reduce growth, cause inflation, and strain public finances. The World Meteorological Organization (2023) estimates 2 million deaths and $4.3 trillion in losses globally from 1970–2021, with 90% of losses in developing countries. In Pakistan, the 2010 floods displaced nearly 20 million people and reduced GDP growth from 4.5% to 2.5%. The 2022 floods displaced 33 million and caused $11 billion in infrastructure damage, hitting rural households hard and driving food inflation. Supply disruptions also raised fuel prices. Disasters reduce tax revenues while reconstruction burdens increase deficits and debt.

Ecological Fragility and Loss of Natural Buffers

Pakistan's ecological systems are deteriorating rapidly under climate stress. Glacial retreat in the Hindu Kush–Karakoram threatens freshwater supply. Deforestation and degraded mangroves reduce natural flood protection. IPCC warns that ecosystems already face irreversible changes, and adaptation options shrink with further warming (World Resources Institute, 2023). Ecosystem losses weaken agriculture, water filtration, and biodiversity, amplifying shocks over time.

Humanitarian and Social Impacts

According to the World Bank (2022), The 2022 floods displaced 8 million people, injured 12867 individuals, and killed over 1,700 in Pakistan. Health crises followed, including outbreaks of waterborne diseases. Internal displacement due to floods and droughts mirrors a rising trend: according to the International Displacement Monitoring Centre (IDMC), 32.6 million people globally were displaced by climate disasters in 2022. Pakistan's poorest districts suffer the most, particularly in Sindh, which suffered the greatest part of the 2022 climate events; as a result, post-disaster poverty rates increased. School closures, malnutrition, and asset loss deepen generational vulnerability.

Empirical Linkage Between Climate Events and Real Economy

Recent research has introduced new Climate Uncertainty (CU) and Climate Policy Uncertainty (CPU) indices derived from news data in leading English newspapers in Pakistan. These measures show that the CU index spikes during major disasters (e.g., the 2010 and 2022 floods), indicating that both severe climate events and policy instability increase uncertainty. Empirical analysis, often using VAR models, suggests that a shock in CO2 emissions raises CU significantly after several months. Conversely, a shock to CPU significantly reduces CO2 emissions, likely due to policy-induced caution or a reduction in economic activity. This highlights the important empirical linkage between climate uncertainty and the real economy, consistent with findings that show reduced GDP growth during extreme climate events.

National Policy Considerations and Action Framework

After 2010, given the disastrous effects of climate events, the Government of Pakistan established the Ministry of Climate Change and Environmental Coordination (MoCC) in August 2017. Yet, despite past experience and an institutional response, the impacts of the 2022 floods remained deeply alarming (a reality only reinforced further by the devastation of the 2025 monsoon floods). Although the MoCC has actively pursued climate policy, progress has been constrained by the complex interplay of environmental, social, economic, and political factors. The need of the hour is to build a more comprehensive and robust policy and action framework that addresses these challenges.

While Pakistan historically emphasized mitigation, recent trends show a growing focus on adaptation and resilience. At the forefront is the National Adaptation and Resilience Strategy, which should prioritize climate-resilient infrastructure such as dams, levees, and stormwater systems, alongside the restoration of natural buffers like forests, mangroves, and wetlands. Strengthening water storage and irrigation systems, as well as integrating early warning and evacuation systems in highly vulnerable areas, is essential to minimize losses.Strong measures are also required to promote drought- and heat-resistant crop varieties, invest in soil health, and adopt smart irrigation techniques. Diversifying cropping patterns and establishing regional food reserves in vulnerable areas can reduce food insecurity, while farmer insurance schemes can mitigate climate-related risks. Expanding cash transfer programs and emergency relief initiatives, such as the Benazir Income Support Programme (BISP), is also crucial in climate-affected regions.

The Pursuit of Climate Justice

Beyond local policies, Pakistan must advocate for climate justice. Despite emitting only 0.9% of global emissions, it suffers disproportionate damage. Pakistan should lead international calls—especially under Article 8 of the Paris Agreement—for climate reparations. With other vulnerable countries, it must demand fair, ambitious financial commitments from developed nations.

Conclusion

Pakistan is on the frontline of a crisis it did little to cause. Climate shocks are now frequent, destructive, and unjust—seen in the 2022 and 2025 floods. They damage the economy, ecosystems, and society, especially the poorest. International support is essential. Developed countries must meet their climate finance responsibilities, while Pakistan must strengthen local resilience and global advocacy. Without shared responsibility and local readiness, the crisis will only deepen.

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