The Climate Cost of Indifference : Pakistan's Battle against Policy Failures and Global Neglect

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Pakistan is living through the climate crisis in real time. From floods that erase entire communities to heat waves that make cities unlivable, the country has become a symbol of climate injustice—suffering some of the world's most devastating environmental impacts despite contributing almost nothing to the problem. This thesis asks a hard question: what happens when a country already facing political instability and economic fragility is also left alone to face a crisis it didn't create?

Through an in-depth analysis of Pakistan's climate policies, like the National Climate Change Policy (NCCP) and Nationally Determined Contributions (NDCs), this research reveals a landscape of ambition on paper, but inertia in practice. Corruption, poor governance and top-down planning have blocked real progress, while vulnerable communities, especially women, minorities and rural populations, are excluded from the decisions that affect them most. At the global level, the story is just as bleak. Wealthy nations have made lofty promises about climate finance, but what Pakistan receives is tangled in red tape, buried in loans, and far too little, far too late. As climate migration increases and entire regions become uninhabitable, the lack of timely international support raises serious questions about global accountability and justice.

This thesis doesn't just highlight what's broken, it proposes how to fix it. From realistic renewable energy pathways to community-driven adaptation and climate finance reform, the recommendations point toward a model of resilience built on transparency, inclusion, and long-term vision. Climate change isn't just a science problem or a policy problem, it's a justice problem. Pakistan stands at the intersection of all three.

Introduction

The global climate crisis is no longer a distant or abstract challenge, rather, it is a harsh reality affecting communities, ecosystems and economies across the entire planet. For Pakistan, a country whose contribution to the problem is negligible, the impacts have been devastating and deeply unfair. Despite emitting less than 1% of global greenhouse gases, Pakistan consistently ranks among the most climate-vulnerable nations in the world. Its vulnerability stems from a combination of factors such as an economy which is heavily dependent on agriculture, a rapidly growing population and geographic features that expose it to extreme weather events. From the rugged peaks of the Himalayas to the flood-prone plains of the Indus River, Pakistan's natural diversity is both a blessing and a challenge. While these landscapes support millions of lives, they are also at the mercy of a rapidly changing climate. For ordinary Pakistanis, this isn't just about melting glaciers or rising sea levels, it's about no longer having the necessities to live life.

Climate Vulnerability

Pakistan's geography is truly beautiful but this diversity also makes the country especially vulnerable to climate-related challenges. In the north, the towering Himalayas, Karakoram and Hindu Kush mountain ranges host one of the world's largest networks of glaciers, serving as a critical water source for millions of people (Chaudhry, 2017). These glaciers feed the Indus River system, which is the backbone of Pakistan's agriculture and supports nearly 90% of the country's food production. However, rapid glacial melt driven by rising global temperatures poses two different threats. On one hand, flooding becomes more frequent during peak melt seasons, on the other, there is a looming risk of water shortages in the years to come (World Bank, 2021). At the same time, unpredictable and irregular monsoon patterns, with rains that are either insufficient or devastatingly heavy, wreak havoc across the country, washing away villages, destroying crops and forcing families out of their homes (UNFCCC, 2022).

In urban centers like Karachi, the financial capital of Pakistan, heatwaves are emerging as a deadly new normal. Lacking greenery or infrastructure which is designed to mitigate rising temperatures, the city becomes like a furnace, especially in its low-income neighborhoods, where people have little escape from the blistering heat (USAID, 2024). Rural regions such as Sindh

and Balochistan face an equally dire challenge, prolonged droughts. It is important to understand that these rural areas are extremely low income with very little development at all. These droughts dry up fields and ruin harvest, pushing farming communities deeper into poverty whilst creating cycles of food insecurity that are extremely hard to escape (World Bank, 2021). The coastal areas, particularly around the Indus Delta are doing no better. Rising sea levels are steadily encroaching on land, while saltwater intrusion has destroyed what was once known as fertile farmland. Many of these communities have no choice but to migrate inland or to bigger cities, straining already limited resources and overpopulating urban areas. (UNDP, 2012). These problems show us to what extent Pakistan's environment and people are connected, signifying how hard it is for certain communities.

Floods 2022

In the summer of 2022, Pakistan faced one of the most devastating disasters in its history. Torrential monsoon rains, far heavier than usual, poured across the country for weeks, turning towns and villages into massive lakes. The scale of destruction was unimaginable with entire communities submerged, leaving families stranded on rooftops or wading through waist-deep water in search of safety (World Bank, 2022). Seeing images of people clutching their children or livestock as their homes disappeared under the floodwaters painted a grim picture of how brutal the climate crisis can really be.

The floods impacted over 33 million people, about 15% of the country's population (OCHA, 2022). More than 1,700 lives were lost, but the numbers don't capture the full story. Families were torn apart and many lost everything from homes to farms, businesses and a sense of safety. Provinces like Sindh and Balochistan, already some of the poorest regions in the country, were hit the hardest. Farmers watched their crops wash away, along with their hopes of earning a modest livelihood for the year (FAO, 2022).

When the floodwaters finally receded, the destruction left behind was staggering. Mud and debris covered once populated streets, homes were reduced to rubble and fields were left completely barren. An astonishing number of schools and hospitals, lifelines for many communities, were also wiped out. The estimated damages and economic losses reached a staggering $30 billion (ADB, 2022). Beyond these numbers were the individual stories such as children unable to return to school or the bigger picture, that Pakistan is not a very literate

country and needed children to have access to school. Schools that serve the upper middle class and above had the option to go online, but for the majority of people in Sindh and Balochistan if the school was not completely destroyed, they did not have the facilities to teach online. The floods didn't just destroy buildings and crops, they exposed weaknesses in Pakistan's ability to handle disasters. The country's infrastructure wasn't built to withstand such intense weather.

Adding to the problem is Pakistan's economic situation. The country is already heavily in debt, owing over $130 billion to international creditors (IMF, 2022). This debt forces the government to spend a huge part of its budget on repayments, leaving little room to invest in disaster preparedness/management or recovery efforts. After the floods, the government faced an impossible task of finding the money to rebuild homes and roads, help farmers recover and prepare for future disasters, all while trying to pay off its debt owed to other countries or lenders.

The floods also raised big questions about fairness. Pakistan contributes to a low amount of global greenhouse gas emissions but is among the countries most affected by climate change (Chaudhry, 2017). Pakistan accounts for around 3.08% of the global population, while emitting less than 1% greenhouse gases. (UN, 2024). This isn't just about bad luck, it's about how the actions of wealthier, industrialized countries have put vulnerable nations like Pakistan in harm's way. While international aid arrived, it was far from enough to cover the massive costs. Pakistan received about $1 billion in pledges, a miniscule fraction of the $30 billion needed to rebuild (OCHA, 2022). This left the country to shoulder the burden of recovery largely on its own for a problem that it was not mainly responsible for.

Many in Pakistan and beyond are calling for debt relief as a way to give the country breathing room to recover. Instead of paying back loans, Pakistan could use that money to rebuild schools, homes, and roads destroyed by the floods. Some are also pushing for "loss and damage" funding, where wealthier nations that contribute the most to climate change would compensate countries like Pakistan for the harm they've suffered. Without these kinds of changes, Pakistan risks falling deeper into a cycle of debt and disaster, with each new crisis setting the country back even further than the last (UNDP, 2022).

The 2022 floods weren't just a natural disaster but they were also a wake-up call. They showed how deeply climate change is tied to everyday life in Pakistan, from the food people eat to the homes they live in. The road to recovery will be long and difficult and it's clear that

Pakistan can't do it alone. What the country needs now is not just financial aid but also global recognition that its suffering is tied to larger, systemic injustices. The floods were devastating, but they also presented an opportunity to rebuild not just what was lost but to create a more resilient and sustainable future.

Environmental Justice

Environmental justice is not just a theoretical concept, it's a lived reality for millions of people in Pakistan who are bearing the brunt of a crisis they did little to create. The concept is a simple one where everyone should have the right to a healthy environment and an equal chance to adapt to climate challenges. Yet, in Pakistan, this fairness is far from reality. The impacts of climate change don't fall equally on everyone. Instead, they amplify existing inequalities, hitting the poorest and most vulnerable communities the hardest. Take the 2022 floods as an example. While wealthier urban areas like parts of Islamabad or Lahore have access to better resources and infrastructure to cope with disasters, rural communities in Sindh and Balochistan often lack even the basics, such as reliable shelters or clean drinking water. For families living hand-to-mouth, a flood doesn't just mean temporary inconvenience but can mean losing everything, from their homes to their livelihoods (OCHA, 2022). Women, in particular, face heightened risks during disasters. In local culture, many are responsible for caring for children or elderly family members, yet they often have the least access to resources like healthcare or transportation during emergencies (UNDP, 2022).

Internationally, the concept of environmental justice takes on a different but equally important form. Pakistan is responsible for a tiny fraction of global greenhouse gas emissions, yet it ranks among the top countries suffering from climate-related disasters (Chaudhry, 2017). This imbalance raises an uncomfortable question, how is it fair that nations like Pakistan pay such a high price for a crisis largely driven by the industrialized world? The problem here is not just driven by numbers but by the fact that wealthy, industrialized countries made choices that have led to this situation.

Environmental justice isn't just about fairness on paper or financial compensation, it's about recognizing and addressing these inequalities in meaningful ways. Domestically, this means ensuring that climate policies include the voices and needs of the most affected groups. For instance, involving women, farmers and indigenous communities in decision-making can

lead to policies that are more inclusive and effective (FAO, 2022). Internationally, it means rethinking how aid is conceptualized, shifting from a charity-based model to one rooted in responsibility and partnership. Developing nations like Pakistan need support that goes beyond disaster relief, they need tools that will help them prepare for and prevent disasters.

Policy Responses : Progress & Gaps

When it comes to policies, Pakistan has taken some steps in the right direction, but the reality is that these efforts often feel like patchwork solutions to much larger problems. Policies exist, but they lack the funding and enforcement needed to truly address the scale of the challenge. On paper, Pakistan has shown that it understands the gravity of the challenge. The real question, however, is whether these policies are bold enough to make a difference in a country that faces some of the worst climate risks in the world.

A major policy effort is Pakistan's Nationally Determined Contributions (NDCs) under the Paris Agreement. In its updated NDCs submitted in 2021, Pakistan pledged to reduce its greenhouse gas emissions by 50% by 2030, with 15% of that reduction coming through domestic efforts and the remaining 35% contingent on international support (UNFCCC, 2022).To the casual eye, these numbers may seem ambitious, potentially even inspiring.Taking a closer, more educated look will reveal that there are significant gaps. Achieving these reductions requires massive investments in renewable energy and infrastructure, areas where Pakistan has made limited progress. For instance, the country still relies heavily on fossil fuels, with coal-fired power plants forming a growing part of its energy mix despite the global push toward cleaner alternatives (ADB, 2022).

The much-publicized Billion Tree Tsunami project is another example of Pakistan's attempt to address climate change. Launched in 2014, the initiative aimed to reforest degraded landscapes and mitigate the impacts of deforestation. The project has received praise, particularly from international organizations, however, allegations of mismanagement and exaggerated reporting have raised questions about its true impact (WWF Pakistan, n.d.).

One problem lies in enforcement. Pakistan has plenty of policies, but implementation often falls apart due to weak governance and corruption. For example, while the government has outlined plans to transition to renewable energy, many projects are stalled or abandoned due to mismanagement or political interference (World Bank, 2021). Meanwhile, industries contributing

significantly to pollution often go unchecked, either due to lack of regulation, nepotism or failure to enforce existing laws.

Beyond enforcement issues, there's also the question of inclusivity. Many of Pakistan's policies are top-down, designed without much input from the communities they are meant to help. Rural farmers, who are among the most affected by climate change, rarely have a voice in shaping policies around water management or agricultural resilience (FAO, 2022). Women, who often bear the brunt of climate impacts in Pakistan are similarly excluded from key decision-making processes. This lack of inclusivity does nothing for the effectiveness of the policies because the only way your policies will work is if you include marginalized and affected communities into the decision making process. Local knowledge is integral and will be much more effective than knowledge of any government official.

The global context adds another layer to the problem. While Pakistan's updated NDCs hinge on international support, the funds pledged by wealthier nations remain insufficient and often come with requirements. For example, the much-anticipated Green Climate Fund, designed to help vulnerable countries like Pakistan, has delivered far less than what is needed to meet even basic climate goals (UNDP, 2022).

International Responsibilities

The principle of "common but differentiated responsibilities" was designed to address this imbalance, yet in practice, it remains little more than an effective idea. The international community has fallen far short of the commitments it has made to support vulnerable countries, leaving nations like Pakistan to face an uphill battle largely on their own. The Paris Agreement, while hailed as a historic step forward in the fight against climate change, has not lived up to its promise. Wealthier countries pledged to mobilize $100 billion annually by 2020 to help developing nations mitigate and adapt to climate change. This target has consistently been missed, with actual contributions falling significantly short (UNFCCC, 2022). For Pakistan, this funding gap is not just a number, it has real and devastating consequences to the entire country. Projects that could help communities adapt, such as improved irrigation systems or early warning mechanisms for floods are often delayed due to lack of funding.

What makes this even more frustrating is the bureaucracy tied to international climate financing. Much of the money pledged by industrialized countries comes with strings attached.

Complex application processes and delays in disbursement mean that even when funds are allocated, they often don't reach the communities that need them most in time (UNDP, 2022). For Pakistan, which is already stretched thin by debt repayments and economic instability, navigating this red tape is an added burden it can barely afford. It seems like many of the countries, before disbursing the money, have to make an internal decision about whether they really want to contribute to this cause.

The recent floods of 2022 highlighted this failure. Pakistan's government appealed for international assistance, emphasizing the urgent need for support. While aid did arrive, it was far from enough. Wealthier nations pledged around $1 billion, a fraction of the $30 billion needed to rebuild and recover (OCHA, 2022). This mismatch between promises and reality is not just disappointing, it is a reminder of how climate financing and negotiation works in today's world.

One of the most glaring gaps in international climate agreements is the lack of a robust mechanism for loss and damage compensation. This concept, which calls for polluting nations to compensate vulnerable countries for the irreversible impacts of climate change, has been discussed for years but remains largely theoretical to date. At the 2022 United Nations Climate Change Conference (COP27), there was some progress on establishing a loss and damage fund. However, without any concrete financial commitments, it risks becoming yet another empty gesture (UNFCCC, 2022).

International responsibility also extends beyond financing. Wealthier nations have been slow to share the technology and expertise needed to help developing countries transition to cleaner energy and build climate-resilient infrastructure. Pakistan's efforts to shift toward renewable energy, as outlined in its Nationally Determined Contributions (NDCs), rely heavily on international support. Yet, progress has been slow, with little movement on technology transfers or capacity-building initiatives (ADB, 2022). This lack of action undermines the broader global effort to combat climate change.

At its core, the failure of the international community is a failure of accountability. Wealthier nations continue to prioritize their own economic growth and political interests over the urgent needs of vulnerable countries that don't have enough time left. This imbalance creates a system where countries like Pakistan are left to bear the brunt of a crisis they did not create.

Without meaningful support, Pakistan and other developing nations in that region risk being trapped in a cycle of disasters and recovery, unable to build the resilience they need to break free.

Climate Migration

Climate migration or the forced displacement of people due to climate-related events, is a tricky issue to deal with. Unlike traditional migration, which is often voluntary and driven by economic or social factors, climate migration occurs when people have no choice but to leave their homes because the environment can no longer support them. These individuals, also referred to as climate refugees, are not formally recognized under international law, leaving them without legal protections or frameworks for resettlement.

Pakistan is no stranger to displacement caused by extreme weather events. The 2022 floods completely uprooted communities, destroying homes and infrastructure. Families in Sindh and Balochistan, who had lived in the same villages for generations, were left with no choice but to seek refuge in overcrowded relief camps or migrate to urban centers like Karachi. For many, returning home is not an option since their lands remain waterlogged or damaged beyond repair. Floods are only one aspect. In arid regions like the Thar Desert, prolonged droughts have made farming and livestock rearing nearly impossible. Rainfall in the area was once life sustaining, however rainfall patterns have now become unpredictable. Locals often migrate to nearby cities, hoping to find work but the transition is anything but smooth. Many end up in informal settlements with poor living conditions, no access to clean water and few opportunities to earn a stable income (FAO, 2022).

Coastal communities in the Indus Delta are facing a different kind of crisis. Rising sea levels and saltwater intrusion have wasted fertile farmland. Fishing villages, which rely on both the land and the sea for their livelihoods are being forced inland as the waters encroach. Over the years, more than a million people have migrated from coastal districts like Thatta and Badin to nearby urban areas, where they often face social and economic hardships (Asian Development Bank, 2022). Even cities, which are often seen as safe havens, are struggling to cope with the influx of climate migrants. Karachi, Pakistan’s largest city, has seen waves of rural migrants fleeing drought, floods and heatwaves. However, Karachi itself is increasingly unlivable due to

overcrowding, crumbling infrastructure and rising temperatures that frequently exceed 45°C during heatwaves (World Bank, 2021).

The issue of climate migration is particularly devastating for Pakistan because it comes at a time when the country is already battling instability on multiple fronts. Economically, Pakistan is burdened with a mounting external debt and high inflation, leaving little room to invest in long-term climate resilience. Politically, frequent changes in leadership and weak governance mean that policies addressing climate migration are rarely implemented effectively. Socially, the arrival of displaced populations in urban areas often amplify issues as sectarian differences and scarce resources play a role.

Research Objectives

This research aims to assess which policies Pakistan can design and implement at a domestic level to make the country more climate resilient. Additionally I will also assess which policies the international community can follow to ensure developing countries like Pakistan are not disproportionately affected. I plan to analyze existing policies and their effectiveness/implementation as well as designing new ones that would strengthen climate resilience domestically. This research will also entail analysing existing international agreements and where their shortcomings are in terms of climate financing.

Process/Approach

Understanding Pakistan's climate crisis required an in-depth analysis of both its environmental vulnerabilities and policy responses. I began by reviewing research on Pakistan's unique geography, which makes it highly susceptible to extreme weather events. The combination of towering mountains, sprawling plains and an intricate river system has led to recurring disasters, including floods, droughts and glacial melt. While I had witnessed extreme weather firsthand while living in Pakistan, I knew that a broader, evidence-based perspective was necessary. Examining major climate-induced disasters, particularly the 2022 floods, helped frame the scale of the crisis and the country's response mechanisms.

A central focus of my research was Pakistan's Nationally Determined Contributions (NDCs) under the Paris Agreement. These commitments outline the country's emission reduction

targets and renewable energy transition plans. I evaluated whether these targets were realistic, given Pakistan's ongoing dependence on fossil fuels, economic instability and reliance on international climate finance. This analysis extended to a review of government policies, including the National Climate Change Policy (NCCP), the Alternative and Renewable Energy Policy and the Ten Billion Tree Tsunami Programme. Rather than assessing these policies in isolation, I examined their effectiveness in practice, looking at governance challenges, enforcement gaps as well as financial mismanagement.

To assess Pakistan's role in international climate finance, I studied agreements such as the Loss and Damage Fund and the financial commitments made under COP27. This research went beyond simply tracking pledges. I investigated how much funding had actually been disbursed, the barriers that prevented Pakistan from accessing these funds and why loans rather than grants remained the dominant financing model. The financial burdens associated with these agreements revealed a deeper issue: Pakistan's ability to implement climate adaptation strategies remained largely dependent on external support that was often delayed or insufficient.

Seeking firsthand insight into these policy challenges, I conducted an interview with Arif Ahmed Khan, a former official in Pakistan's climate ministry. His extensive experience provided a deeper understanding of governance constraints, particularly the role of corruption and political interference in climate initiatives. His perspective reinforced many of the findings from my research, especially regarding elite capture, mismanagement of climate funds and the reluctance of international donors to offer grant-based assistance.

Beyond Pakistan, I looked at Bangladesh and Kenya, two countries that have developed more structured climate adaptation and finance accountability mechanisms. These case studies provided alternative governance models that could be applied in Pakistan, particularly in terms of transparent climate finance distribution and community-driven adaptation efforts.

The findings highlight the urgent need for both domestic reforms and greater international accountability, emphasizing the challenges Pakistan faces in securing a sustainable and resilient future.

Discussion/Results

The National Climate Change Policy : Ambition VS Reality

The National Climate Change Policy (NCCP), first introduced in 2012 and revised in 2021, was designed as a comprehensive framework to guide Pakistan toward climate resilience. The policy aligns with Pakistan's Vision 2025 and international commitments under the Paris Agreement, emphasizing both mitigation and adaptation strategies (Ministry of Climate Change [MoCC], 2021).

At its core, the NCCP aims to address the following key areas:

- Water Resource Management: Protecting glaciers, rivers and groundwater sources from climate-driven variability.
- Agriculture and Food Security: Promoting climate-smart agriculture to improve crop yields and drought resilience.
- Disaster Risk Reduction (DRR): Strengthening early warning systems and building climate-resilient infrastructure.
- Energy Transition: Increasing renewable energy production, reducing reliance on coal and fossil fuels.
- Urban Planning & Air Pollution Control: Implementing low-emission transportation systems and greener cities.
- Coastal Protection: Addressing sea-level rise and saltwater intrusion in Sindh and Balochistan.

The policy is ambitious in its scope, reflecting a broad understanding of Pakistan's vulnerability to climate change. However, despite its comprehensive vision, the NCCP has largely failed in practice due to severe governance challenges, enforcement issues and political inertia (Khan & Malik, 2022).

Structural Weaknesses

1. Lack of Legal Binding Mechanisms

Unlike climate policies in countries such as Germany and the UK, where national climate strategies are legally binding, Pakistan's National Climate Change Policy (NCCP) lacks enforceability. It serves as a guiding framework rather than a law, meaning that federal and provincial authorities are not legally obligated to implement its directives (Qureshi, 2023). Without legally mandated emission reduction targets, compliance remains voluntary rather than obligatory, leaving Pakistan's climate action weak and inconsistent.

Further weakening enforcement, regulatory bodies like the Pakistan Environmental Protection Agency (Pak-EPA) lack both the authority and financial resources to enforce climate action at the provincial and local levels. Climate regulations often go unchecked, allowing industries to continue environmentally harmful practices without consequences. This absence of accountability and enforcement renders Pakistan's climate commitments ineffective, as policies exist on paper but rarely translate into action.

2. Absence of Budgetary Allocations

The NCCP does not establish a dedicated climate fund, making its implementation heavily dependent on external funding. This creates severe financial bottlenecks, preventing the government from investing in long-term climate resilience projects. The annual federal climate budget allocates less than 1% of total government spending to climate action (IMF, 2023), reflecting the government's failure to prioritize environmental sustainability.

Provincial governments face even greater financial constraints, lacking the autonomy and resources to implement localized adaptation measures. While international climate finance, such as Green Climate Fund (GCF) support, is meant to provide financial relief, Pakistan's governance and transparency issues have made it difficult to access these funds (UNDP, 2023). Additionally, the reliance on foreign aid for climate projects means that Pakistan remains vulnerable to shifting donor priorities, further weakening the consistency of its climate response.

Without stable and long-term domestic funding, most NCCP objectives remain unfulfilled, leaving Pakistan reliant on reactive disaster relief measures rather than proactive climate adaptation strategies.

3. Weak Institutional Coordination Between Ministries

One of the greatest structural failures of Pakistan's climate governance is the lack of inter-ministerial coordination. Climate change affects multiple sectors, including energy, agriculture, water management and disaster risk reduction, yet government ministries work in isolation instead of collaborating under a unified framework. Without a centralized climate authority, different ministries fail to align their policies, resulting in conflicting priorities (Ahmed et al., 2022).

This lack of coordination is evident in Pakistan's energy policies, which contradict its climate commitments. While the NCCP emphasizes the need for renewable energy, the Ministry of Energy continues to approve coal-fired power plants under the China-Pakistan Economic Corridor (CPEC) (Saeed, 2023). As a result, Pakistan remains locked into fossil fuel dependence, further worsening its climate vulnerabilities.

Political Barriers to Effective Implementation

1. Short-Term Political Agendas Over Long-Term Climate Action

Political instability has been a major obstacle to Pakistan's climate policy implementation. Climate policies often change with every new administration, disrupting ongoing initiatives and preventing long-term climate planning. Many climate projects are abandoned when new governments take power, as political leaders prioritize short-term, high-visibility projects over systemic reforms.

Instead of investing in sustainable adaptation programs, governments focus on symbolic initiatives like tree plantation drives, which create the illusion of climate action while failing to address the root causes of climate vulnerability (Malik, 2023). Climate change is frequently used as political rhetoric rather than a serious governance priority, making Pakistan's response inconsistent and reactionary rather than proactive and strategic.

2. The Influence of the Fossil Fuel Lobby

Pakistan's fossil fuel industry exerts significant political influence, making the transition to renewable energy extremely difficult. Coal and oil companies actively lobby against stronger environmental regulations, fearing the financial impact of stricter emissions controls. Despite

climate disasters worsening every year, coal-fired power plants continue receiving billions in subsidies, reinforcing Pakistan's reliance on fossil fuels (World Bank, 2023).

A clear example of this resistance occurred in 2015, when efforts to phase out coal, which accounted for 7.5%-10% of emissions, were blocked by senior government officials to protect large-scale investments in coal energy infrastructure in Thar desert (Arif Ahmed Khan, personal interview, 2024). Without reducing fossil fuel dependency, Pakistan's ability to meet its NCCP and NDC targets remains severely compromised.

Exclusion of Vulnerable Communities from Policymaking

One of the most significant failures of Pakistan's climate policy is its top-down approach, which largely excludes marginalized communities, indigenous populations, and women from decision-making processes. Despite these groups facing the harshest climate impacts, they have little to no representation in climate policy formation and implementation (UNDP, 2023). The exclusion of vulnerable communities has led to ineffective adaptation strategies, creating a disconnect between policy frameworks and ground realities while deepening socio-economic disparities.

1. The Sindh and Balochistan Drought Crisis

Recurring droughts have plagued Sindh and Balochistan, with annual rainfall decreasing significantly over the past two decades (Pakistan Meteorological Department [PMD], 2022). These regions, already among the most economically disadvantaged in Pakistan, are facing worsening water scarcity and desertification, making agriculture and livestock farming increasingly unsustainable.

Local farmers and herders in these areas have developed traditional water conservation techniques, such as rainwater harvesting and underground water storage, which could significantly improve water security. However, these indigenous practices are not integrated into national climate adaptation plans (FAO, 2023). Instead, government policies often ignore localized, community-driven solutions, leaving these regions without sufficient adaptation support. The lack of direct consultation with affected communities has led to ill-suited policies, further exacerbating the vulnerability of rural populations in Sindh and Balochistan.

2. The Neglect of Indigenous Communities in the Northern Highlands

Pakistan's northern highlands, including Gilgit-Baltistan and Chitral, are experiencing rapid glacial melt, leading to frequent glacial lake outburst floods (GLOFs) (WWF Pakistan, 2023). Indigenous populations in these regions have lived with these environmental risks for generations and have developed localized knowledge on glacial behavior, flood mitigation, and ecosystem preservation. However, this knowledge is systematically ignored in national disaster preparedness planning.

Instead of working with indigenous communities to develop locally adapted solutions, the government continues to rely on foreign-engineered flood barriers and early warning systems, which have failed multiple times due to poor maintenance and a lack of regional adaptation (UNEP, 2023). These overlooked communities remain highly vulnerable to climate disasters, as government interventions fail to account for local realities and knowledge.

3. Land Displacement Due to Development Projects

In some cases, climate projects meant to mitigate environmental damage have directly harmed vulnerable populations by displacing rural and indigenous communities. A stark example is the "Ten Billion Tree Tsunami" afforestation initiative, which, while praised internationally, has also led to land grabs that displaced indigenous groups (WWF Pakistan, 2022). Large-scale tree plantation projects were implemented without consulting local communities, leading to forests being planted on land traditionally used for farming and grazing.

The affected populations received no compensation or alternative land provisions, leaving them economically marginalized and further exacerbating existing inequalities. This reflects a wider pattern of development-driven displacement, where environmental initiatives are implemented without ensuring that local populations benefit or are protected from harm.

4. The Disproportionate Impact of Climate Disasters on Women

The effects of climate change are not gender-neutral, with women facing a disproportionate share of climate-induced hardships. During the 2022 floods, 70% of those displaced were women and children, as men were often able to migrate in search of work while

women were left behind to deal with worsening conditions (OCHA, 2023). The floods left pregnant women in flood-hit areas with severe health risks, as they struggled to access maternal healthcare, with hospitals and clinics either destroyed or overwhelmed (UNICEF, 2023).

Furthermore, climate-induced migration has led to an increase in gender-based violence, as displaced women lack legal protection in overcrowded relief settlements (Human Rights Watch, 2023). The absence of gender-sensitive policies in climate adaptation efforts has further deepened inequality and vulnerability, leaving women without adequate support in crisis situations.

5. The Absence of Women in Decision-Making

Despite being one of the most affected groups, women hold less than 10% of leadership positions in climate-related ministries and organizations (UNDP, 2023). Their exclusion from climate policymaking spaces means that critical gender-specific challenges are not addressed, leading to policies that fail to support women's needs and climate resilience efforts.

There are no female-led climate adaptation programs in Pakistan, despite research showing that women-led conservation initiatives have been highly effective in other developing nations (Kabeer & Rao, 2023). Women's cooperatives and local farming networks could play a crucial role in sustainable agriculture and reforestation projects, yet they receive no funding or government support (FAO, 2023). The absence of gender-responsive climate policies continues to leave women marginalized in climate governance and adaptation strategies.

6. The Need for Gender-Responsive Climate Policies

Pakistan's climate adaptation strategies fail to account for gender-specific challenges, leaving women in rural areas with limited access to essential resources. Critical gaps include:

- Access to clean water, as rural women often travel long distances to fetch water, making them highly vulnerable to droughts and water shortages.
- Financial support for female farmers, who face systemic discrimination when trying to access loans, land rights and agricultural assistance programs.

- Inclusion in disaster preparedness programs, ensuring women have equal access to relief aid and rehabilitation resources after climate disasters (UN Women, 2023).

7. The Unequal Impact of Climate Disasters on Minority Groups

Minority communities in Sindh and southern Punjab, many of whom work in agriculture and brick kilns, face disproportionate exposure to extreme heat and flooding (Human Rights Watch, 2023). When disasters strike, they are often denied access to relief aid, as systemic discrimination leads to aid distribution being prioritized for majority groups.

Following the 2022 floods, Christian and Hindu communities in flood-affected areas reported being denied emergency relief, with many forced to live in unsafe and unsanitary conditions (Amnesty International, 2023). These inequalities in climate disaster response reflect broader patterns of social exclusion, where minority communities are left more vulnerable to the compounding effects of climate change.

7. Lack of Minority Representation in Environmental Governance

There are no minority representatives in Pakistan's Ministry of Climate Change or other major environmental policymaking bodies. The lack of representation means that minority-majority regions receive less funding for disaster relief and adaptation projects, worsening their long-term vulnerability (Ali, 2023).

Additionally, religious minorities are often ignored in relocation plans following climate disasters, forcing many into homelessness or economic displacement (HRCP, 2023). Addressing these inequalities requires inclusive climate governance structures that ensure equitable access to disaster relief and adaptation programs.

8. Urban Bias

Pakistan's climate adaptation efforts have largely focused on urban sustainability, while rural communities remain underfunded. Cities like Islamabad and Lahore have benefited from tree plantation drives and electric bus programs, yet rural villages in Sindh and Balochistan

continue to suffer from water shortages, poor infrastructure, and extreme heatwaves (UNEP, 2023).

Agriculture-based climate adaptation programs, which are critical for rural resilience, receive minimal funding compared to urban-focused projects. This urban bias has led to deepening regional disparities, leaving smallholder farmers and low-income rural populations without the necessary resources to cope with climate change (FAO, 2023).

Weak Disaster Preparedness and Climate Adaptation Measures

Pakistan remains highly unprepared for climate disasters, as seen in the 2022 floods, which displaced 33 million people and exposed severe weaknesses in disaster preparedness (OCHA, 2023). Despite being highly exposed to glacial melt and extreme weather, Pakistan lacks a national strategy for water security and climate adaptation (World Resources Institute, 2023).

The NCCP fails to integrate urban heat adaptation, despite record-breaking heatwaves in Karachi and Lahore, where temperatures exceeded 50°C (USAID, 2023). Without stronger early warning systems, climate-resilient infrastructure and long-term adaptation planning, Pakistan will continue to suffer from preventable climate disasters.

International Comparisons

Bangladesh's Community-Based Adaptation Model

Bangladesh is one of the most flood-prone countries in the world, yet it has made significant progress in climate adaptation through community-based approaches (World Bank, 2023).

- Early Warning Systems: Bangladesh has developed low-cost, technology-driven early warning systems that empower local communities to act before disasters strike. In contrast, Pakistan's flood warning systems remain outdated and unreliable, with many rural areas lacking access to real-time climate data (OCHA, 2023).

- Decentralized Climate Governance: Bangladesh's National Adaptation Plan allocates funding directly to local governments, allowing them to tailor adaptation projects to their specific needs. Pakistan, on the other hand, maintains a highly centralized climate governance system, preventing local authorities from taking autonomous climate action (UNDP, 2023).
- Cyclone Shelters and Climate-Resilient Infrastructure: After devastating cyclones in the early 2000s, Bangladesh built thousands of multi-purpose cyclone shelters, significantly reducing casualties in extreme weather events. Pakistan lacks similar large-scale community-based shelters, leaving millions at risk during climate disasters (FAO, 2023).

Kenya's Climate Finance Framework

Kenya, like Pakistan, relies heavily on international climate finance. However, it has implemented strong anti-corruption measures to ensure transparency in climate fund allocation.

- Climate Finance Accountability Mechanisms: Kenya's Climate Change Act (2016) established a National Climate Fund that is independently monitored by anti-corruption agencies (UNEP, 2023). Pakistan, however, has no independent climate finance oversight body, leading to fund mismanagement and misallocation (IMF, 2023).
- Incentives for Renewable Energy Investment: Kenya has successfully attracted private investment in wind and solar energy, making renewables account for over 75% of its energy mix (World Resources Institute, 2023). Pakistan, in contrast, continues subsidizing coal and fossil fuels, despite its NDCs promising a transition to cleaner energy (Saeed, 2023).
- Community-Driven Climate Adaptation: Kenya has implemented grassroots climate resilience programs, particularly in drought-prone areas, where local farmers receive direct financial support to implement sustainable agricultural practices. Pakistan, meanwhile, continues to neglect small-scale farmers in its climate strategies, despite their vulnerability to drought and heat stress (FAO, 2023).

Pakistan's NDCs : A Policy Contradiction

Nationally Determined Contributions (NDCs) are the climate action plans that countries submit under the Paris Agreement, outlining their commitments to reducing greenhouse gas emissions and adapting to climate change. Each country's NDC reflects its national priorities, economic constraints, and capabilities, and they are updated periodically to reflect increased ambition. Pakistan's NDCs lay out the country's targets for emission reductions, energy transitions and adaptation strategies, but their effectiveness depends on both domestic implementation and international financial support.

1. Unrealistic Targets and Over-Reliance on Foreign Aid

Pakistan's reduction target of 50% GHG emissions by 2030 is one of the most ambitious among developing nations, yet it heavily depends on international financial support (UNFCCC, 2021).

- Pakistan requested $100 billion in climate financing to meet its 35% conditional emissions reduction target, but has failed to secure this amount.
- In 2023, only $3 billion of climate finance was pledged, meaning 97% of the required funds remain unavailable (IMF, 2023).
- The country's economic instability, poor credit ratings, and corruption concerns make it unlikely to attract sufficient global climate financing (ADB, 2023).

In contrast, countries like Bangladesh have reduced dependence on foreign aid by increasing domestic climate adaptation investment, ensuring greater financial autonomy in climate action (World Bank, 2023).

2. Contradictory Energy Policies: Fossil Fuel Expansion vs. Green Commitments

Despite pledging to cut emissions, Pakistan continues to expand fossil fuel use, particularly coal and imported liquefied natural gas (LNG).

- Pakistan's NDCs commit to phasing out coal, yet the government approved new coal-fired power plants under the China-Pakistan Economic Corridor (CPEC) (Saeed, 2023).
- The Thar Coal Project, funded by China, continues to expand operations, making coal a major part of Pakistan's energy mix despite NDC commitments (ADB, 2023).
- Coal production increased by 40% between 2019-2023, undermining the NDC goal of achieving 60% renewable energy by 2030 (World Bank, 2023).

3. Lack of Clear Implementation Roadmaps

Pakistan's NDCs outline broad commitments but fail to provide detailed sectoral roadmaps for achieving emission reductions (Ahmed, 2023).

- There is no clear plan for decarbonizing the transportation, agriculture, and industrial sectors, which account for over 70% of national emissions.
- The energy sector dominates climate mitigation efforts, while other high-emission sectors lack dedicated strategies (World Resources Institute, 2023).
- Pakistan has no legislative framework to ensure accountability for NDC implementation, meaning the targets are not legally binding (Qureshi, 2023).

Other countries, such as Kenya and South Africa, have developed sector-specific climate action roadmaps, ensuring clear and measurable pathways toward emission reductions (UNEP, 2023). Pakistan, however, lacks such clarity, making policy execution difficult and inconsistent.

4. Absence of Structural Reforms for Renewable Energy Development

One of the biggest challenges is regulatory uncertainty, which discourages private-sector investment in renewables.

- Pakistan's energy regulatory framework remains heavily biased toward fossil fuel industries, with large-scale subsidies for coal and natural gas making renewables less competitive (Saeed, 2023).

- Investors in renewable energy projects face bureaucratic delays, with approval processes for solar and wind projects taking years due to overlapping jurisdictional conflicts between federal and provincial authorities (World Bank, 2023).
- The lack of long-term energy pricing policies creates financial risks for independent power producers (IPPs), reducing their willingness to invest in renewable projects.

Another key issue is Pakistan's outdated energy grid, which is not equipped to handle large-scale renewable integration.

- The national grid suffers from transmission losses exceeding 18%, one of the highest rates in South Asia, making solar and wind projects less financially viable (ADB, 2023).
- The absence of a smart grid system prevents effective energy storage and distribution, meaning renewable energy cannot be efficiently integrated into the power mix.

In addition, Pakistan's solar energy sector remains underdeveloped due to high import tariffs on solar panels and batteries.

- Despite having some of the best solar potential in the world, Pakistan heavily taxes imported solar technology, making solar expansion costly and inefficient (UNEP, 2023).
- In contrast, countries like India and Vietnam have eliminated solar import tariffs, leading to a boom in domestic solar energy production (World Resources Institute, 2023).

5. Weak Climate Governance and Institutional Gaps

The Ministry of Climate Change (MoCC), responsible for overseeing Pakistan's NDC implementation, suffers from low funding, weak enforcement authority, and bureaucratic inefficiencies (UNDP, 2023).

- Pakistan's climate governance remains fragmented, with poor inter-ministerial coordination between the energy, agriculture, and finance sectors.
- Weak policy enforcement results in little accountability for missed targets.
- Pakistan has no independent climate oversight body, meaning there is no transparency in NDC implementation progress (Ali, 2023).

Other countries, like Kenya, have created independent climate watchdogs to track and enforce NDC progress, improving governance accountability (UNEP, 2023). Pakistan must establish a similar oversight body to ensure policy commitments translate into real action

Case Study : The Ten Billion Tree Tsunami Programme

In 2019, Pakistan launched the Ten Billion Tree Tsunami Programme (TBTTP) as part of its broader efforts to combat deforestation, biodiversity loss, and climate change. The initiative, led by the Ministry of Climate Change (MoCC), aimed to restore degraded forests, enhance carbon sequestration, and promote green jobs while aligning with Pakistan's National Climate Change Policy (NCCP) and Nationally Determined Contributions (NDCs) under the Paris Agreement (Ministry of Climate Change, 2019).

The project was a continuation of the Billion Tree Tsunami Project (BTTP), implemented in Khyber Pakhtunkhwa (KP) between 2014 and 2018, which successfully planted 1.2 billion trees and helped the province meet the Bonn Challenge commitment of restoring 350,000 hectares of forests (WWF Pakistan, 2021). Encouraged by this success, the federal government expanded the initiative nationwide with a goal of planting ten billion trees by 2023, with a budget of 447.8 million USD(United Nations Environment Programme [UNEP], 2021).

While the TBTTP was widely praised as a bold climate action initiative, its implementation has been marred by mismanagement, financial irregularities, environmental concerns, and governance failures. The project provides a critical case study in evaluating the challenges of large-scale afforestation programs in developing nations with governance and transparency issues.

Objectives and Initial Progress

The primary objectives of the TBTTP included:

- Expanding forest cover from 5.1% to 6.5% of Pakistan's total land area by 2023.
- Mitigating climate change by enhancing carbon sequestration through large-scale afforestation.

- Restoring biodiversity and ecological balance in deforested regions, wetlands, and urban centers.
- Reducing soil erosion and improving water conservation by planting trees in flood-prone areas.
- Providing economic benefits by creating green jobs in nursery establishment, tree plantation, and forest protection (Ministry of Climate Change, 2020).

By mid-2021, the programme reported over 1 billion trees planted, with an estimated 85,000 jobs created, particularly in rural and underdeveloped regions (UNEP, 2021). Additionally, more than 3,500 nurseries were established, producing millions of saplings annually for future afforestation projects (WWF Pakistan, 2021).

Challenges and Implementation Gaps

1. Financial Irregularities and Corruption Allegations

A special audit report conducted by the Auditor General of Pakistan (AGP) revealed mismanagement of over Rs. 5.2 billion in the programme. The report found discrepancies in:

- Over-reporting of plantation figures
- Procurement of uncertified seeds
- Failure to monitor sapling survival rates (Pakistan Today, 2024).
- The report highlighted that many planted trees were either washed away due to floods or never planted at all, raising concerns about data manipulation and funding misappropriation (The Nation, 2024).

2. Failure to Meet Plantation Targets

- The programme originally set a target of planting 3,296 million trees by 2023. However, by mid-2023, only 2,069 million trees had been planted—falling over 1.2 billion short of the goal (Ministry of Climate Change, 2023).
- Several provincial governments, including Sindh and Balochistan, reported delays in implementation due to lack of funds, poor planning, and extreme weather conditions (FAO, 2023).

3. Poor Sapling Survival Rates and Environmental Concerns

- Initial audits found low sapling survival rates, with estimates suggesting that 30-40% of planted trees did not survive due to improper site selection, extreme weather, and lack of post-plantation maintenance (WWF Pakistan, 2023).
- Environmentalists have criticized the choice of tree species, arguing that fast-growing exotic species like eucalyptus and conocarpus were planted instead of native species better suited for Pakistan's climate (United Nations Development Programme [UNDP], 2022).
- In some cases, afforestation efforts disrupted local ecosystems by replacing natural grasslands and wetlands with unsuitable tree species (FAO, 2023).

4. Social and Economic Exclusion

- The programme's economic benefits have not been equally distributed, with small landholders, indigenous communities, and nomadic herders often excluded from afforestation projects (International Institute for Environment and Development [IIED], 2021).
- Many landless communities and pastoralists lost access to traditional grazing lands due to large-scale tree plantations, leading to increased land disputes (HRCP, 2023).
- Reports indicate that wealthier landowners benefited disproportionately by receiving government subsidies for tree plantations, while marginalized groups were left out (IIED, 2021).

5. Lack of Transparency and Accountability

- The lack of an independent oversight mechanism has made it difficult to verify the project's actual impact. Third-party audits and environmental monitoring have been limited, making it hard to assess the long-term success of the initiative (IMF, 2023).
- In comparison, countries like Ethiopia and China, which have implemented similar large-scale afforestation programs, integrated digital monitoring systems using satellite imagery and AI-powered assessment tools to track tree growth and survival rates (World Bank, 2023).

Lessons Learned & Future Recommendations

1. Enhanced Financial Transparency and Accountability Measures

- Establish an independent monitoring body to audit afforestation projects and prevent financial mismanagement.
- Implement real-time digital tracking of planted trees using satellite imagery and geotagging technology, similar to systems used in China's Loess Plateau restoration program (World Bank, 2023).

2. Focus on Native and Climate-Resilient Tree Species

- Shift away from monoculture plantations of fast-growing exotic species and focus on native species like Sheesham, Neem, and Acacia, which provide better ecological benefits (UNEP, 2023).

3. Incorporating Community-Based Afforestation Models

- Involve local communities, indigenous groups, and farmers in plantation and maintenance efforts to ensure long-term sustainability.
- Provide economic incentives for small landowners and pastoralists to engage in afforestation projects, rather than displacing them (IIED, 2023).

4. Improved Climate Resilience in Afforestation Strategies

- Integrate afforestation efforts into disaster risk reduction (DRR) strategies to ensure trees are planted in climate-vulnerable regions that can benefit from flood control and erosion mitigation (FAO, 2023).
- Develop water-efficient afforestation techniques to ensure high survival rates in drought-prone regions (UNDP, 2023).

Climate Corruption in Pakistan

Corruption remains one of the greatest barriers to effective climate action in Pakistan, undermining efforts to mitigate climate risks, distribute climate finance fairly and enforce

environmental policies. Climate finance mismanagement, manipulation of environmental data, and political interference by fossil fuel lobbies have contributed to systemic governance failures, preventing Pakistan from effectively implementing climate policies (Transparency International, 2023).

As climate disasters intensify, the need for transparent, accountable climate governance becomes increasingly urgent. However, Pakistan's climate response remains plagued by elite capture, where financial resources meant for environmental initiatives are often controlled by powerful corporate and political interests rather than benefiting the vulnerable communities most affected by climate change. This corruption extends to climate financing, environmental monitoring, and policy implementation, resulting in widespread inefficiencies as well as misallocation of funds.

1. Climate Funds Lost to Corruption and Mismanagement

Between 2015 and 2023, Pakistan received over $800 million in international climate finance intended to support climate adaptation, renewable energy projects, afforestation programs, and disaster preparedness. However, a significant portion of these funds remains unaccounted for due to weak financial tracking mechanisms and lack of accountability in fund allocation (International Monetary Fund [IMF], 2023). This financial mismanagement has raised serious concerns among international donors, many of whom remain hesitant to increase funding without stronger oversight mechanisms.

A 2022 audit of climate-related projects revealed that nearly 40% of allocated climate funds were either misappropriated or diverted to non-environmental projects, including infrastructure developments that had little or no connection to climate resilience (Transparency International, 2023). The audit also highlighted fraudulent reporting practices, where officials inflated project costs or claimed progress on initiatives that had not been implemented at all.

One of the biggest scandals in climate corruption has been the Ten Billion Tree Tsunami Programme, a flagship afforestation project designed to combat deforestation and restore degraded ecosystems. While initially praised for its ambition, the project has been riddled with mismanagement and financial fraud. Reports indicate that over Rs. 5.2 billion meant for

afforestation was lost due to fraudulent reporting, inflated plantation numbers, and unverified expenditure claims (Pakistan Today, 2024). Investigations found that many saplings were either never planted or failed to survive due to poor site selection and inadequate post-plantation care. In some cases, officials exaggerated reforestation figures to meet political targets, making it difficult to assess the actual impact of the project.

The mismanagement of climate funds not only weakens Pakistan's ability to address climate challenges but also damages its credibility on the international stage, making it harder to secure future climate financing from global institutions.

2. Unequal Access to Climate Financing

Climate financing in Pakistan is unevenly distributed, favoring politically influential regions while marginalized provinces receive disproportionately low funding. The largest share of climate finance is allocated to Punjab and Khyber Pakhtunkhwa (KP), while Balochistan and Sindh, despite facing some of the worst climate impacts, receive significantly less financial support (UNDP, 2023).

This imbalance stems from political favoritism, bureaucratic inefficiencies, and corruption in fund allocation mechanisms. Well-connected individuals, corporate elites, and government-affiliated businesses often receive preferential access to climate-related financial incentives, while small farmers, indigenous communities, and low-income populations are systematically excluded from receiving financial aid (World Bank, 2023).

The elite capture of climate finance means that climate adaptation and disaster relief projects rarely reach the communities most in need. Farmers in Balochistan, who face persistent droughts, receive minimal support for water conservation projects, while industries in urban centers benefit from generous subsidies for renewable energy initiatives. This inequality worsens Pakistan's climate vulnerability by concentrating climate resources in a few privileged regions, leaving rural and underdeveloped areas to bear the brunt of climate disasters without adequate financial support.

3. Manipulation of Environmental Data and Reporting

Pakistan's climate governance failures are further compounded by the manipulation of environmental data and corruption in impact assessments for climate-related projects. To justify ongoing funding from international donors, government agencies have been caught inflating progress reports on afforestation, emissions reduction, and adaptation initiatives.

For instance, official reforestation figures in afforestation programs often fail to reflect actual survival rates of planted trees. Reports indicate that survival rates for planted saplings are as low as 30-40%, yet government figures suggest much higher success rates to maintain public and international support for these projects (WWF Pakistan, 2023). The lack of independent monitoring and verification means that many projects continue to receive funding despite failing to meet their targets.

Similarly, environmental impact assessments (EIAs) for major infrastructure and energy projects are frequently manipulated to secure government approvals for projects that pose serious environmental risks. Large-scale developments, including coal power plants, hydropower dams, and industrial zones, often receive quick approval through falsified environmental reports that underestimate the risks of pollution, deforestation, and displacement (UNEP, 2023).

Several coal and industrial projects in Sindh and Balochistan were approved without adequate environmental oversight, despite posing major threats to local ecosystems and water sources (FAO, 2023). The failure to enforce proper environmental regulations allows polluting industries to operate unchecked, further exacerbating Pakistan's air and water pollution crisis.

This pattern of data manipulation and corruption in environmental governance undermines efforts to build climate resilience and erodes public trust in climate policies. Without transparent reporting mechanisms, there is no way to accurately assess Pakistan's climate progress or to hold government agencies accountable for failures in implementation.

Structural Shortcomings of International Climate Agreements and Their Implications for Pakistan's Climate Goals

One of the most glaring weaknesses in international climate agreements is the failure of developed countries to fulfill their climate finance pledges.

- Under the Paris Agreement, developed nations committed to mobilizing $100 billion annually by 2020 to assist developing countries in mitigation and adaptation (UNFCCC, 2015). However, as of 2023, this target has never been fully met, with actual contributions falling short by at least $17 billion per year (OECD, 2023).
- The new post-2025 climate finance goal, currently under negotiation, lacks concrete figures and binding mechanisms, meaning there is no guarantee that developing nations like Pakistan will receive the necessary funding.
- Climate finance needs have far surpassed the $100 billion target, with estimates suggesting that developing countries require at least $5.9 trillion by 2030 to meet climate adaptation and mitigation needs (UNCTAD, 2023).

Implications for Pakistan:

- The 2022 floods, which caused $30 billion in economic losses, demonstrated Pakistan's urgent need for adaptation funds, yet international assistance remained far below what was required (IMF, 2023).
- Pakistan's climate adaptation needs exceed $14 billion annually, yet it receives less than 10% of that amount from international climate finance sources (World Bank, 2023).
- Without guaranteed financial support, Pakistan cannot scale up climate resilience infrastructure, making it more vulnerable to future climate disasters.

<u>Flawed Mechanisms for Climate Fund Distribution</u>

- Cumbersome Bureaucratic Processes: Applying for climate finance under global mechanisms like the Green Climate Fund (GCF) involves excessive paperwork, lengthy approval processes and rigid project requirements, which overburden developing nations with weak institutional capacity (UNDP, 2023).
- Preference for Private-Sector Investments: A significant portion of climate finance is channeled through private-sector loans rather than direct public funding, prioritizing profit-driven projects over essential adaptation needs (LSE, 2023).
- Disproportionate Focus on Mitigation over Adaptation: More than 70% of international climate finance is allocated to emission reduction (mitigation) projects, while less than

30% is directed toward adaptation, despite developing nations like Pakistan requiring urgent adaptation support (OECD, 2023).

Implications for Pakistan:

- Pakistan has struggled to access funds from the Green Climate Fund (GCF), with only five projects approved in the past decade, compared to over 30 for countries like India and Bangladesh (UNEP, 2023).
- Adaptation projects such as climate-resilient housing, flood protection infrastructure, and drought-resistant agriculture remain underfunded, leaving Pakistan highly exposed to climate disasters (World Bank, 2023).
- The high cost of private-sector loans for renewable energy projects makes it difficult for Pakistan to transition to solar and wind energy, delaying its decarbonization goals (IMF, 2023).

Lack of Legal Enforcement and Accountability

- No Legal Consequences for Non-Compliance: If a developed nation fails to meet its climate finance pledge, there are no penalties or enforcement mechanisms (UNFCCC, 2023). This allows high-emission nations to backtrack on their commitments without consequences.
- Unclear Tracking and Transparency: Climate finance flows are poorly tracked, making it difficult to assess whether funding is new, additional, or simply reallocated from existing aid budgets (Transparency International, 2023).
- Double Counting and Misreporting: Many developed nations inflate their climate finance contributions by including non-climate-related aid, commercial loans, and private investments, creating a misleading picture of actual financial support (OECD, 2023).

Implications for Pakistan:

- Pakistan cannot rely on international climate finance as a stable funding source, since there is no legal obligation for developed nations to provide consistent support (UNCTAD, 2023).

- Due to weak financial tracking systems, Pakistan faces challenges in verifying whether pledged climate funds are actually reaching vulnerable communities (Transparency International, 2023).
- The lack of enforceability in global climate agreements means that Pakistan is left without legal recourse when promised climate finance fails to materialize.

Impact on Pakistan's Climate Goals

Delayed Climate-Resilient Infrastructure Development

- The 2022 floods, which caused $30 billion in economic losses and displaced over 33 million people, highlighted the urgent need for stronger flood defenses, better drainage systems, and climate-resilient housing (IMF, 2023). However, limited access to adaptation funds has prevented large-scale infrastructure development, increasing Pakistan’s vulnerability to future floods.
- Pakistan’s coastal cities, including Karachi and Gwadar, are highly susceptible to sea-level rise and storm surges, yet international climate finance has failed to support coastal adaptation projects, such as mangrove restoration and protective seawalls (World Bank, 2023).
- Rural communities in Sindh and Balochistan continue to suffer from severe droughts due to insufficient investment in water conservation infrastructure, despite Pakistan's high demand for climate adaptation finance (UNDP, 2023).

Underfunded Disaster Response and Recovery Efforts

- The 2022 floods exposed major gaps in Pakistan’s ability to secure emergency climate finance, with relief and reconstruction efforts severely underfunded. While the UN and IMF pledged emergency funds, the disbursement process was slow and insufficient, leaving millions without adequate housing and infrastructure restoration (Pakistan Climate Finance Report, 2023).
- Glacial melt in the Himalayas and Karakoram ranges has triggered deadly flash floods in Gilgit-Baltistan and Khyber Pakhtunkhwa, yet Pakistan has been unable to secure

international adaptation finance to implement early warning systems and protective flood barriers (UNEP, 2023).

- Heatwaves in urban areas like Karachi and Lahore have become more frequent and deadly, but international funding for urban climate adaptation (e.g., heat-resistant housing and cooling shelters) has been minimal, increasing the health risks for low-income communities (World Bank, 2023).

Energy Transition Goals Jeopardized by Insufficient Green Investments

- Pakistan has not received the level of foreign investment needed to expand its solar, wind and hydropower sectors, delaying the transition to clean energy (IMF, 2023).
- The over-reliance on private-sector climate finance means that large-scale renewable projects struggle to secure funding, as investors prioritize profit-driven projects over public-interest infrastructure (World Resources Institute, 2023).
- Due to climate finance shortfalls, Pakistan continues to import fossil fuels and expand domestic coal production, further increasing GHG emissions and worsening air pollution in urban areas (ADB, 2023).

Rising Debt Burden Due to Loan-Based Climate Finance

- Over 70% of climate finance for developing countries is provided as loans, often with high-interest rates, further burdening Pakistan's economy (OECD, 2023).
- Pakistan is already heavily indebted, with its external debt surpassing $130 billion. Taking on more climate-related loans limits its ability to fund essential social services, including education, healthcare, and poverty reduction programs (IMF, 2023).
- Instead of receiving direct adaptation grants, Pakistan is forced to borrow funds to build climate resilience, leading to a vicious cycle of debt and underdevelopment (UNCTAD, 2023).

Conclusion

Pakistan's climate crisis is no longer a looming threat,it is an urgent reality reshaping lives, economies, and governance. This research has shown that despite contributing less than 1% to global greenhouse gas emissions, Pakistan remains one of the most climate-vulnerable

nations, facing devastating floods, prolonged droughts and extreme heatwaves. The 2022 floods alone, which displaced millions and caused economic losses exceeding $30 billion, underscored the country's inadequate climate preparedness and the failures of both domestic and international climate policies.

This study illuminates how Pakistan's National Climate Change Policy (NCCP) and Nationally Determined Contributions (NDCs), while ambitious in scope, fall short due to weak governance, poor enforcement, corruption as well as financial mismanagement. The continued reliance on fossil fuels despite stated commitments to renewable energy further weakens the country's climate resilience. Additionally, the exclusion of marginalized communities, including women, indigenous populations, and small-scale farmers, from climate decision-making has resulted in adaptation strategies that do not adequately address the needs of those most affected. Without a legally binding climate framework and transparent governance mechanisms, Pakistan will remain ill-equipped to implement meaningful climate action.

On the international front, this research has exposed the inequities of global climate finance and the structural failures of climate agreements. Despite promises under the Paris Agreement and other multilateral climate frameworks, wealthier nations have failed to deliver on financial commitments, leaving developing countries like Pakistan to struggle with adaptation and mitigation efforts. The current reliance on loan-based climate finance, rather than direct grants, has exacerbated Pakistan's economic instability, reinforcing a cycle of debt rather than providing the necessary relief. The bureaucratic complexity of international climate funds, such as the Green Climate Fund (GCF), have further marginalized Pakistan and other Global South nations from accessing critical financial resources.

While this research highlights substantial policy failures, it also contributes to a growing body of literature advocating for structural climate reforms. Domestically, Pakistan must establish a legally binding climate action framework, improve climate governance transparency and prioritize climate adaptation investments in disaster resilience. Internationally, Pakistan and other developing nations must push for legally binding financial commitments from wealthier nations and demand accountability for unfulfilled pledges. Additionally, this research reinforces the urgent need to shift climate finance away from loans and toward grants, ensuring that

financial assistance aids adaptation rather than increasing the debt burden of vulnerable countries.

However, this study also acknowledges its limitations. While it provides a comprehensive analysis of Pakistan's climate governance and international climate finance mechanisms, further research is needed to explore alternative financing models, the role of private-sector investments, and localized community-led adaptation strategies. Additionally, given the rapidly evolving nature of global climate policy, future research should focus on Pakistan's positioning in upcoming climate negotiations and its ability to influence global climate finance reforms.

The implications of this research extend beyond academic discourse. Policymakers must act with urgency to bridge the gap between policy and implementation, ensuring that climate strategies are inclusive and responsive to Pakistan's most pressing needs. The global community must also recognize that climate justice is not just a moral imperative but a necessity for sustainable development. With strategic reforms, strengthened governance, and international accountability, Pakistan can emerge as a leader in climate resilience, setting a precedent for other developing nations facing similar challenges. The time for meaningful change is now.

Recommendations for Strengthening Climate Policy Implementation in International Agreements and Domestic Policy

Pakistan's ability to build climate resilience and achieve long-term sustainability depends on significant reforms at both the national and international levels. While the country has introduced policies to address climate change, several challenges prevent meaningful progress. Governance remains weak, and the enforcement of climate policies is inconsistent. Corruption and financial mismanagement continue to divert resources away from critical adaptation and mitigation efforts. Pakistan also remains heavily dependent on fossil fuels, slowing its transition to renewable energy. Social inequalities make matters worse, as vulnerable communities receive little support in building resilience against climate disasters.

Beyond domestic shortcomings, Pakistan faces barriers in securing international climate finance. Global agreements promise financial support to developing nations, but much of it remains inaccessible. The application process for funding is complex and bureaucratic, making it

difficult for countries with limited administrative capacity to receive timely assistance. Most climate finance is provided as loans rather than grants, increasing debt burdens instead of offering sustainable support. Developed nations continue to fall short on their financial commitments, leaving Pakistan with limited resources to implement large-scale climate adaptation and mitigation projects.

This section expands on Pakistan's vulnerabilities and the weaknesses in its climate policies. It examines the country's struggles with transitioning to clean energy and securing international funding. It also provides specific recommendations to strengthen climate policy at the national level and improve the effectiveness of global climate agreements. Addressing these issues is essential for Pakistan to protect its people, safeguard its economy, and adapt to the growing threats of climate change.

1. Establish a Legally Binding Climate Action Framework

Pakistan's National Climate Change Policy (NCCP) and Nationally Determined Contributions (NDCs) are currently non-binding frameworks, which means there are no legal consequences for failing to meet climate targets.

Policy Recommendations:

- Pass a National Climate Act, which legally mandates emission reduction targets, adaptation measures, and sector-specific climate policies, similar to the UK's Climate Change Act (2008).
- Make climate action legally enforceable by introducing penalties for non-compliance among government agencies, corporations, and industries.
- Establish a dedicated Climate Authority with the power to oversee, regulate, and enforce climate laws, similar to Germany's Federal Environment Agency (UBA).

2. Reform Climate Governance and Enhance Transparency

Policy Recommendations:

- Strengthen anti-corruption mechanisms in climate financing by requiring independent audits of all government-led climate projects.
- Create a Centralized Climate Coordination Taskforce to align climate policies across the energy, agriculture, finance and planning ministries, ensuring inter-agency collaboration.
- Develop a Public Climate Finance Dashboard where all climate-related expenditures, projects and foreign climate aid allocations are transparently reported.

3. Addressing Energy Sector Inefficiencies Before Transitioning to Renewables

Pakistan's energy sector is burdened by inefficiencies, including high transmission losses, reliance on costly LNG imports and financial mismanagement within power distribution companies (IMF, 2023). These inefficiencies increase the cost of energy production and hinder large-scale investments in renewables.

Rather than advocating for a rapid and complete shift to renewables, Pakistan must first fix inefficiencies in its current energy setup while simultaneously increasing investments in renewables (ADB, 2023).

International financial institutions, such as the IMF and World Bank, are pressuring Pakistan to reduce energy sector leakages before approving further financial aid (IMF, 2024).

Policy Recommendations:

- Reducing transmission losses and upgrading infrastructure.
- Renegotiating LNG import contracts to ensure financial sustainability.
- Reforming power distribution companies to prevent losses and mismanagement.

Once these foundational issues are addressed, Pakistan can gradually phase out fossil fuels by scaling up solar, wind and hydroelectric power generation (UNEP, 2023).

4. Gradual Renewable Energy Transition

While Pakistan's NDCs set ambitious renewable energy targets, an immediate phase-out of fossil fuels is not financially feasible given the country's economic instability and energy reliance (UNFCCC, 2023).

Many developing nations, including India and South Africa, have opted for a steady rather than immediate energy transition, balancing economic growth with decarbonization efforts (IEA, 2023).

Policy Recommendations:

- Diversify its energy mix by promoting public-private partnerships in the solar and wind energy sectors.
- Gradually phase out coal subsidies while ensuring that renewable alternatives are cost-competitive.
- Improve energy storage infrastructure to handle fluctuations in solar and wind energy output.
- Modernize the national power grid to reduce transmission losses and integrate renewables efficiently (World Bank, 2023).

By focusing on incremental shifts rather than an abrupt transition, Pakistan can strengthen energy security, meet its climate commitments and reduce dependence on costly fossil fuel imports.

5. Increase Climate Adaptation Investments

Policy Recommendations:

- Establish a dedicated National Adaptation Fund, ensuring at least 50% of climate financing is allocated to adaptation projects.
- Expand investment in flood management infrastructure, including early warning systems, climate-resilient housing, and sustainable water conservation projects.
- Introduce mandatory climate risk assessments for all major infrastructure projects to ensure future developments are resilient to extreme weather events.

6. Address Climate Inequalities and Strengthen Community-Based Adaptation

The exclusion of marginalized communities (e.g., rural farmers, indigenous groups, women, and minorities) from climate policymaking worsens social inequalities and reduces the effectiveness of climate action.

Policy Recommendations:

- Ensure women and marginalized communities have representation in climate policymaking through quota-based participation in climate councils.
- Decentralize adaptation planning, allowing local governments and community-based organizations to lead climate resilience initiatives.
- Implement targeted climate financing for rural and indigenous communities, prioritizing water security, climate-resilient agriculture, and disaster preparedness projects.

7. Advocate for Legally Binding Climate Finance Commitments

Pakistan has been promised billions in climate aid, yet funds often remain unfulfilled or delayed due to voluntary pledges and weak accountability mechanisms.

Policy Recommendations:

- Push for legally binding climate finance commitments under the Paris Agreement, ensuring developed nations fulfill their financial pledges.
- Demand penalties for non-compliance, ensuring countries that fail to meet their climate finance obligations are held accountable under international law.
- Push for a post-2025 climate finance target that reflects the actual needs of developing countries, moving beyond the outdated $100 billion annual target.

8. Reform Climate Fund Distribution Mechanisms

Accessing climate finance through the Green Climate Fund (GCF), World Bank, and IMF remains a slow and bureaucratic process, preventing Pakistan from securing timely adaptation financing.

Policy Recommendations:

- Simplify access to climate finance by reducing bureaucratic red tape in application processes for the Green Climate Fund (GCF) and Adaptation Fund.
- Create a Global Emergency Climate Fund to ensure rapid disbursement of funds for disaster relief and adaptation, similar to the UN's Central Emergency Response Fund (CERF).

9. Reform Climate Finance Structures

Pakistan's climate financing challenges stem from both domestic governance issues and global financial constraints. More than 70% of climate finance is provided as loans, worsening Pakistan's debt crisis and limiting its ability to invest in long-term sustainability. While shifting from loan-based to grant-based climate finance is ideal, it remains highly unlikely due to Pakistan's poor governance record, corruption concerns and lack of financial transparency (Transparency International, 2023).

The global trend in climate finance is shifting towards returnable capital, where funding is structured as concessional loans, blended finance and private-sector investments rather than direct grants (OECD, 2023). Many donors hesitate to provide unconditional grants due to concerns over elite capture and inefficient fund utilization (UNDP, 2023).

Policy Recommendations:

- Independent oversight bodies to track fund allocations.
- Real-time public reporting on climate funds to enhance transparency.
- Transparent bidding processes for climate projects to prevent mismanagement.
- A Debt-for-Climate Swap Program, similar to successful models in Costa Rica and Indonesia, could allow Pakistan to convert portions of its debt into climate adaptation investments while ensuring that funds are used effectively (World Bank, 2023).

10. Anticaptaing Political Shifts in Global Climate Leadership

The landscape of international climate financing is closely tied to political leadership in high-emitting countries, especially the United States. Under the Trump administration, the U.S. formally withdrew from the Paris Agreement and halted funding to critical institutions like the

Green Climate Fund (GCF), significantly disrupting the momentum of global climate action (UNFCCC, 2021). Although the Biden administration rejoined the Paris Agreement in 2021, the U.S. has consistently fallen short of its climate finance commitments, contributing only a fraction of what was pledged to developing nations (OECD, 2023).

With the potential return of Trump or another administration skeptical of international climate cooperation, Pakistan and other vulnerable nations could face even greater difficulty accessing already-limited climate finance. Trump has already signaled his intent to "terminate" U.S. contributions to climate funds and reverse environmental regulations, making future multilateral climate progress uncertain (The New York Times, 2024).

Policy Recommendations:

- Strengthen climate cooperation with regional and emerging donors, such as China, the UAE, and climate-aligned EU nations.
- Invest in diplomatic engagement within forums like G77+China to collectively advocate for reliable and independent climate financing mechanisms.
- Diversify its funding strategy to include non-Western and non-state actors, such as green bonds, philanthropic climate funds, and public-private partnerships, less vulnerable to geopolitical shifts.

Preparing for international unpredictability is not just strategic, it is essential for sustaining long-term climate resilience.

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