



## Carbon Giants and Climate Victims: Sino-Indian Emissions and Pakistan's Climate Insecurity

Ezzah Hafeez

Mphil IR, University of Management and Technology, Lahore  
[s2025353005@umt.edu.pk](mailto:s2025353005@umt.edu.pk)

### ABSTRACT

*The study investigates the approach, China, India and Pakistan each respond to changes in the climate, with particular attention to their roles on the international platform. As "carbon giants," China and India are developing emission strategies that perceive climate action as a way to boost their positions in the world. "Climate Victim", Pakistan, which has little impact on climate change but is exposed to its risks, treats climate change as a serious security challenge. Utilizing a dual-theoretical approach; Strategic Constructivism for India and China, and Securitization Theory for Pakistan, the paper highlights how national identity, developmental priorities, and perceived injustices shape climate narratives and policies. The flooding disasters in 2010 and 2022 in Pakistan highlight the way the country focuses on climate security to get more international support. The study points out that important failures in multilateral organizations and diplomacy have stopped regional cooperation, especially due to the inability of meetings of SAARC and the India-Pakistan feud. The paper concludes that, in Pakistan, its climate diplomacy now uses morality, security, and justice as key strategies, while regional cooperation is not very strong. The study urges South Asian countries to include climate security in their national plans and restart regional talks to help overcome misunderstandings and make the region stronger against climate threats.*

**Keywords:** Climate Justice, Regional Climate Governance, Securitization, environmental security, Climate Diplomacy

### Introduction

In contemporary world, the landscape of global climate politics has shifted. The spotlight falls onto the world's largest economies and their carbon footprints. South Asia, comprising 1/5th of total world's population, is most compromised region about climate change impacts. It is quite evident from the contemporary climate situations, for instance, extreme weather conditions, unpredicted monsoon rainfalls, increasing temperature, and melting glaciers etc. The three major actors; China, India and Pakistan, with complex socio-politico-economic relations, are now involved in a complex equation of Carbon Giants and Climate Victims. The already complicated relations are now exacerbated by these complexities and demand unconventional and modern solutions to safeguard regional stability. Among the three actors, India and China stand out as two major contributors to Greenhouse gas emissions, motivated by economic ambitions, industrialization, and increasing energy demand, and for that, they are prioritizing their overall growth at the cost of environmental sustainability.

China's carbon emission policies have transformed from slow to aggressive steps as China became the world's largest carbon emitter since 2006. Initially, China had adopted energy intensity targets in its Five-Year plans (Lai, 2021) and leveraged international mechanisms like the Clean Development Mechanism. Till 2010, China has set a goal to peak CO<sub>2</sub> emissions around 2030 with a 60-65% decrease in carbon intensity by 2030 relative to 2005 (Lai, 2021). In 2020, Xi Jinping announced to reach carbon neutrality by 2060. (Lai, 2021) This signals a paradigm shift in China's climate policy. This pledge seems quite unrealistic in scale; achieving a carbon neutrality in mere span of 30 years of peaking. Chinese policymakers formulated a "1+N" policy framework to reach these goals, integrating climate targets into sectoral plans. For example, the 14th Five-Year Plan (2021–2025) explicitly aims to cap coal consumption and expand renewables, aligning near-term actions with the long-term neutrality vision.

Through the observation of China's Climate policy from 1990 till now, six main periods can be identified. (Lai, 2021)

- **Period 1: 1990-2005:** China's stance can be seen to be purely defensive and against the climate change case and the need for the reduction of carbon emissions.
- **Period 2: 2006-2008:** During the subsequent period of 2006–8, China began to respond to climate problems.
- **Period 3: 2009-2011:** China made its global pledges to cut carbon emissions during 2009–11. But China's position continued to be considered inadequate by the climate change lobby of the developed world, particularly the EU, and thus, tension between the two persisted. Their confrontation reached its peak in the aftermath of the 2009 Copenhagen summit, to be elaborated in detail below.
- **Period 4: 2012-2014:** Since late 2012, China's climate policy has entered in the Xi Jinping era. In the subsequent period of 2012–14, China seemed inflexible in international climate negotiations in upholding the rights of developing countries to develop.
- **Period 5: 2015-2019:** This defensive posture was suddenly reversed between 2015 and 2019 when China ratified and hosted the Paris agreement.
- **Period 6: 2020-now:** At the present period of 2020, China seemed to regress from its former assertive posture by adopting carbon-guzzling developmental projects at home.

Chinese scholars like (Pan & Sun, 2023) emphasize that carbon neutrality can offer "great benefits" in terms of jobs, efficiency, pollution reduction, and ecosystem restoration if managed wisely. Key strategies include deploying a national emissions trading system, investing heavily in renewable energy, and pursuing technological innovation. However, China faces a challenging dual mandate: continue economic development and eradicate energy poverty while cutting emissions. (Li et al., 2022) quantify the challenge; to align with a 1.5 °C pathway, China would need to reduce CO<sub>2</sub> by about 9% per year on average from 2030 to 2050, requiring massive investments 2.6% of GDP annually in clean energy infrastructure. This underscores the "real urgency" for China to peak emissions early and implement stringent policies now, as delay would necessitate even steeper cuts later.

India's carbon emission policies initially centered on balancing development needs with climate responsibility under the principle of "common but differentiated responsibilities" (CBDR). Early strategies like India's 2008 National Action Plan on Climate Change prioritized the deployment of renewable energy and enhanced energy efficiency, but without the imposition of specific emission caps. India's undertakings over time changed: from voluntary targets in 2009 (20-25% reduction in emissions per unit of GDP by 2020 compared with 2005) to more ambitious goals under the Paris Agreement. In India's updated national plan in 2022, India pledged to lower GDP emissions intensity by 45% by 2030 (compared with 2005 levels) and to generate about 50% of its electric power from non-fossil sources by 2030. Notably, India pledged a long-term target of net-zero emissions by 2070, marking a change in strategy. Indian climate policy experts like (Dubash, 2023) have described this shift as moving from a defensive posture to actively "mainstreaming" climate into development planning. Key domestic policies, such as massive renewables deployment (175 GW of renewables target by 2022) and a proposed carbon market, underline India's strategy of pursuing emissions mitigation alongside energy security and economic growth. This co-benefits approach, as (Dubash, 2023) argues, has been crucial in aligning climate action with India's development priorities.



Pakistan's carbon emissions policy is shaped by its status as a very low emitter and a very high climate-risk country. With annual GHG emissions around just 0.4% of the global total, Pakistan's mitigation actions have a negligible direct impact on global warming (Adnan et al., 2024a). Recognizing this, Pakistan has nonetheless made conditional pledges under the Paris Agreement. In its updated Nationally Determined Contribution (NDC) submitted in 2021, Pakistan committed to a 50% reduction in projected emissions by 2030, contingent on international finance, and a 15% reduction unconditionally. These targets were formulated despite Pakistan's economic and energy constraints, signaling a willingness to contribute to global efforts. Domestically, Pakistan released a National Climate Change Policy in 2012 (updated in 2021) outlining measures across energy, agriculture, forestry, and disaster management. Key mitigation initiatives include expanding renewable energy (aiming for 60% clean electricity by 2030) and massive reforestation through the "10 Billion Tree Tsunami" project. Yet Pakistan's development needs, providing electricity to its growing population and boosting industrial growth, mean its emissions will likely rise in the short term. Even so, its per capita emissions will remain among the lowest globally. Where Pakistan has been more vocal is on the adaptation and loss & damage fronts. Policymakers argue that international support is imperative given the country's minimal role in causing climate change versus the outsized costs it faces (Adnan et al., 2024b). There is also an implicit climate justice argument in Pakistan's policy stance: the country advocates for increased climate finance, technology transfer, and even compensation for climate-induced losses (a stance that contributed to the push for a global Loss & Damage fund at COP27).

The study is structured into four main sections. First section outlines the emission trajectories and policies of Carbon giants and Pakistan's vulnerability and climate insecurity in relation with Carbon giants' emissions. The second section reviews key literature from three states and identify the gaps and overlaps in perspectives. Third section presents the theoretical framework; securitization theory and strategic constructivism and explain its relevance. The last section concludes the findings and offer policy recommendations.

### **Literature Review; Competing IR Perspectives on Climate Policy in South Asia**

This Section critically analyzes China, India, and Pakistan scholarly thought on the intersection of climate policy and international relations. Each contributor or contributors outline a specific IR tradition; realism, institutionalism, or constructivism. While these Schools of thought are insightful, in this study, securitization theory is used to explain the political construction of climate change as an existential threat in Pakistan and regional politics this construction generates.

**China: Realism, Institutionalism, and Strategic Constructivism**  
China's ascension to great power status has had a significant impact on climate scholarship. Many Chinese researchers view climate policy through the lens of state-centric realism, in which national interests, sovereignty, and developmental imperatives drive environmental decisions.

- (Haibin, 2012) takes an institutionalist perspective, examining China's participation in global climate regimes such as the UNFCCC and the Paris Agreement. He contends that China's rising participation in international institutions represents a strategic shift more than a normative revolution. His research is valuable for analysing policy compliance, but it does not address how climate change is portrayed as a security concern, particularly in regional contexts.
- (He et al., 2022) examines China's climate policies from a realist-developmental perspective. He underlines the state's need to sustain economic growth and energy security while dealing with foreign pressure. While his

study focuses on China's strategic balancing act, climate change is primarily viewed as a governance difficulty rather than a security one affecting regional neighbours such as Pakistan.

- (Pan & Sun, 2023) advances a constructivist-techno-nationalist concept, claiming that ecological civilization and green innovation are new foundations of Chinese identity. However, Pan's constructivism focuses on internal normative shifts rather than how external perceptions (such as Pakistan's climatic vulnerability) affect China's position in regional climate politics.
- (Yi, 2020) uses an institutional-liberal framework to highlight China's leadership in green technologies. He considers international cooperation as a tool of strengthening global governance and China's soft power. This viewpoint is limited in explaining Pakistan's threat framing or the disparity between high emitters and vulnerable countries.
- (Wang et al., 2022) argue from a neoliberal institutionalist standpoint, claiming that collaboration on carbon markets and innovation can alleviate regional tensions. However, such frameworks assume common interests and downplay the hostile narratives Pakistan employs when securitizing climate risks from its neighbours. In contrast to these perspectives, securitization theory emphasizes threat formation, urgency, and exceptionality. It clarifies why Pakistan politicizes China's emissions, notwithstanding China's global cooperation narrative. Institutional and realist approaches lack the analytical skills to address the narrative gap and regional fear.

### **India: Equity-Based Institutionalism and Normative Constructivism**

Indian scholarship is inclined towards synthesizing normative arguments of climate justice with policy-making approaches of institutionalism. Much of Indian IR literature on climate is shaped by India's history as a developing world country in the past.

- (Dubash, 2023) utilizes the institutionalist-constructivist approach, stressing how international equity, norms, and domestic politics shape India's climate diplomacy. For him, India's engagement with global systems is underpinned by principles of responsibility and justice. While his analysis is insightful, his approach downplays security framings and treats climate as a technical and development concern.
- (Narain, 2020) is an institutionalist critical of North-South imbalance and structural divide. Her reasoning regarding climate justice is grounded in post-colonial critique and not security thinking. Although valuable to understand India's resistance to climate authoritarianism from above, she lacks an argument for the regional dimension of India's emissions and their contribution to the climate vulnerability of Pakistan.
- (Ramesh, 2019), ex-environment minister, follows a hybrid realist-institutionalist. He is firm about India's strategic autonomy and sovereignty in global climate talks. Ramesh cares about India's energy security but does not see climate threats as part of an extended security matrix that can guide regional relations.
- (Singh, 2021) writes from a normative-constructionist perspective, highlighting loss and damage, adaptation, and global equity. His framing necessitates international solidarity but not a regional security approach necessary to explain why states such as Pakistan securitize India's climate impacts.
- (Subramanian, 2022) presents a neoclassical realist view. He links climate to economic diplomacy and geopolitical ambitions of India, especially energy policy and technological leadership. This links IR and climate politics

but is not a reply to the existential threat narratives employed by Pakistan.

Collectively, these Indian scholars do add constructively to domestic policy and international equality studies. They are not, however, interested in threat construction, inter-state perception gaps, or climate securitization, on which this article concentrates.

**Pakistan: Securitization and Strategic Vulnerability** Pakistani scholars are more likely to use security-based frameworks, often blending securitization with strategic realism and normative claims about climate justice.

- (Munir, 2023) and (Raza & Ahmed, 2024) explicitly use securitization theory to analyze how Pakistan positions itself as a “climate victim.” They show how Pakistan strategically frames floods, glacial melt, and water stress as security threats to mobilize international support.
- (Sundas Raza, 2023), while critical of over-militarized responses, acknowledges the discursive power of securitization in attracting policy attention.
- (Ali Tauqeer Sheikh, 2024) takes a more governance-based approach, advocating for adaptive planning and development resilience. His work does not capture the strategic use of threat language.
- Dr. Fahad Saeed and Sherry Rehman offer scientific and political insights, respectively, but frame climate change in humanitarian and justice terms, not as a direct security issue. Securitization theory is gaining popularity among Pakistani specialists because it matches the country's realpolitik approach to climate vulnerability, which involves translating climate damages into diplomatic leverage and strategic claims. This makes securitization theory the best IR framework for investigating the discursive gap between Pakistan's threat perception and its neighbors' economic and institutional climate reactions.

#### Research Gap:

While studies on climate governance are growing in South Asia, important gaps persist in learning about unequal climate discussions and their effects on the stability of the region. Today, existing research on climate policies does not usually discuss how the opinions of carbon-emitting nations and climate-at-risk states influence their ability to cooperate. Many studies on China, India, and Pakistan touch on economic and energy topics along with climate diplomacy, but only Pakistan's vulnerable situation is usually seen through the lens of how it adapts and helps those in need, rather than how it views climate change as a security threat. Also, regional frameworks like SAARC have yet to be properly explored as ways of addressing climate change. Researchers have yet to discuss all three elements, responsibility for greenhouse gases, how the issue is treated in communication, and shortcomings in institutions, in combination across the whole region. To fill this gap, this study relies on Securitization Theory and Strategic Constructivism as a framework to explore the different climate narratives and what their policy effects are.

#### Research Questions:

1. How do China, India, and Pakistan construct and project their climate narratives in regional and global forums?
2. What role does securitization play in Pakistan's framing of climate change as a national security threat?
3. How does Strategic Constructivism explain the climate behavior of China and India as carbon giants?
4. What institutional and geopolitical barriers hinder effective climate cooperation in South Asia?
5. How can Pakistan balance securitization with constructive regional engagement to mitigate climate insecurity?

#### Theoretical Framework:

This study adopts a dual-theoretical approach to explain the divergent climate behaviors and narratives of Pakistan, China, and India. While Securitization Theory is applied to Pakistan's framing of climate change as an existential threat, the carbon giants, China and India, are analyzed through the lens of Strategic

Constructivism, which better accounts for their identity-driven and interest-based climate postures within the international system.

#### 1. Securitization Theory and Pakistan's Climate Vulnerability

Securitization theory, originating from the Copenhagen School, examines how non-traditional issues, such as environmental degradation or pandemics, are transformed into matters of ‘security’ through discursive practices. Securitization occurs when political actors frame an issue as a critical threat to the survival of a referent object (e.g., the state, society, or the economy), thus legitimizing extraordinary measures outside of normal politics. (Eroukhmanoff, 2018)

In the case of Pakistan, climate change is increasingly represented as a national security issue. The devastating floods of 2010 and 2022 have catalyzed this shift, with top officials, including the Prime Minister and Climate Minister, portraying Pakistan as a “climate victim” suffering from global emissions it did not cause. This rhetorical strategy invokes moral urgency and appeals to climate justice, while also elevating the issue within national and international security discourses.

This securitization serves multiple functions. Domestically, it legitimizes resource mobilization and institutional reforms; internationally, it strengthens Pakistan's case for climate finance, adaptation assistance, and compensation under mechanisms such as the UNFCCC Loss and Damage Fund. Moreover, by positioning climate change as a “threat multiplier,” securitization allows Pakistan to embed environmental risks within broader national security and geopolitical frameworks. However, as some scholars caution (Floyd, 2010) securitization may also risk militarizing the response or overshadowing participatory, long-term adaptation planning.

#### 2. Strategic Constructivism and Carbon Giant Behavior

While securitization theory aptly captures Pakistan's vulnerability framing, it is less effective in explaining the climate behavior of China and India, states that are not primarily responding to climate change as a security threat, but as a developmental and geopolitical challenge. For these actors, Strategic Constructivism offers a more appropriate framework.

Strategic Constructivism, a synthesis of rationalist and constructivist (Hopf, 2010), holds that states act in ways shaped by both material interests and evolving identities. Policies are not merely cost-benefit calculations; they are embedded in ideational structures, norms, reputational concerns, and national self-conceptions. For carbon giants like China and India, climate change is thus navigated through the interplay of developmental imperatives, global status aspirations, and normative positioning. China's adoption of slogans such as “ecological civilization” and its emphasis on green leadership through Belt and Road green investments exemplify how identity construction intersects with strategic goals. In much the same way, India's view on climate equity and common responsibilities works to resolve past issues and creates a basis for India to lead nations of the Global South. They make the climate issues a main focus in order to help their own strategy and self-determination. They support climate technology not only because it is the expected thing to do but also to help their own position among other countries. The outcomes they seek depend on their goals for the nation's future, unlike carbon victims who focus on survival.

#### Integrating the Two Frameworks

This study based on climate asymmetry in South Asian region can be best described under the lens of combination of Securitization theory and Strategic constructivism. Climate giants participate in strategic climate governance, motivated by creation of national identity, global prestige and high development ambitions. On the other hand, Pakistan's narrative is based on institutional vulnerability and actual effects of climate giants' activities, which results in securitized speech. This combination also underscores conceptual mismatch that suppress regional climate cooperation.



Pakistan wants quick and effective action, but carbon giants prefer growth-compatible and voluntary solutions.

#### **Methodology:**

##### **Methodological Framework:**

This study adopts qualitative research method based on interpretivism. This method is well suited for investigating how climate change is deliberately formed and politically mobilized in various national contexts. The major method is to analyse climate policy documents, official statements, and scholarly literature from China, India, and Pakistan. This is reinforced with secondary data from international institutions such as the World Bank, UNFCCC, and national environmental agencies.

##### **Case Selection Rationale:**

China, India, and Pakistan are chosen because they represent polar opposites of the regional climate regime. China and India are the carbon giants and major emitters and players in international and regional climate talks. Pakistan is a low-emitting but highly vulnerable country. This then is the asymmetry that makes the case interesting to look at the nexus of emissions, discourse, and perceptions of security.

##### **Background Context: Regional Climate Politics**

South Asia is an important centre for emissions and vulnerability. China India's economic growth has resulted in huge environmental costs, while Pakistan's vulnerability to climate extremes, droughts, floods, and glacial melt, has increased. Despite its common geographical and environmental interconnectedness, the region lacks a comprehensive climate governance framework. Existing settings, such as SAARC, have been underutilized for climate coordinating, owing primarily to political conflicts.

Also, the Indus, Ganges and Brahmaputra basins cover more than just one nation, but climate change adaptation actions are mainly carried out at national level. The lack of regional climate discussions or mutual monitoring systems worsen the mutual trust and attract the weaker states to securitize this issue to seek attention. In this environment, it is very important to understand how governments address and react to the threat of climate change for regional peace and the environment.

#### **Discussion:**

##### **Empirical Cases and Official Securitization:**

With the advancement in climate attribution research, it is quite evident that climate change factors are the result of human-led activities, which are now the cause of extreme events in Pakistan. For example, The World Weather Attribution reports prove that 2022 floods were much more extreme than the previous ones mainly due to exceeding global warming trends, leading to approximately 50-70% rise in such events compared to those happening decades ago (Otto et al., 2023). Such scientific discoveries give more epistemic weight to views related to climate security and can be successfully used at the level of climate negotiations. Although policy debates and theory can provide contextual information, empirical evidence are required to see how Pakistan actively securitizes climate change as an existential threat. The following section analyses two landmark climate catastrophes, the 2010 and 2022 floods in Pakistan and analyzes official discourse and diplomatic interaction that ensued. The catastrophes portray the securitization process whereby the state publicly declares climate effects as existential threats to life that require international intervention.

##### **1. The 2010 Pakistan Floods: Triggers of Climate Securitization**

In July and August 2010, Pakistan faced its worst floods ever, affecting over 20 million people, destroying infrastructure, and flooding nearly one-fifth of the country. Pakistan's government and outside analysts linked these historic floods to modified monsoon patterns caused by global climate change (Pakistan Floods Emergency Recovery Project, 2010). Climatic talk in Pakistan acquired a new level at this juncture as climate talk was redefined from environmental concern at the local level to become a national security concern.

While securitization language was not yet explicit, the language used by the government started to highlight Pakistan's disproportionate vulnerability to its low contribution to worldwide emissions. As Pakistan fought for international security relief, it was evident that climate change had entered the discourse on national security.

##### **2. The 2022 Catastrophic Floods: High-Level Securitization**

The floods of 2022 intensified this discourse even more. Over 33 million people were affected, and the economic loss was estimated at over \$40 billion (UNDP, 2022). The event had become a catalyst for full securitization in domestic politics as well as on the global level.

Prime Minister Shehbaz Sharif, in his address at the 77th United Nations General Assembly (UNGA), described the situation as a "climate catastrophe", stating:

"Pakistan has never seen a starker and more devastating example of the impact of climate change. The injustice of this is glaring. One thing is very clear: what happened in Pakistan will not stay in Pakistan." (UNGA, 2022)

Climate Minister Sherry Rehman characterized the event as a "climate-induced humanitarian disaster of epic proportions", repeatedly asserting in international media interviews that Pakistan contributes less than 1% to global greenhouse gas emissions yet suffers disproportionately from climate impacts (Rehman, 2022)

This official framing reflects the core dynamics of securitization theory, portraying climate change not as an environmental challenge alone, but as an existential threat requiring extraordinary action.

##### **3. Diplomatic Forums: Regional and Global Securitization**

Pakistan has also leveraged regional and global diplomatic platforms to advance its securitized climate narrative:

- At the UN General Assembly (2022) and COP27, Pakistan emphasized its role as a "climate frontline state" and called for "climate justice" from major polluters, implicitly including neighbors like China and India (UNFCCC, 2022). This framing builds pressure on high emitters to take responsibility, not only through mitigation but through climate finance and adaptation support.

##### **Impact on Pakistan:**

The disparity between Pakistan's vulnerabilities and India-China emissions results in real dangers for Pakistani society as a whole. Climate change brought on by global warming is threatening Pakistan's energy systems, public health, agricultural productivity, water security, and even the country's citizens' freedom of movement and means of subsistence. This section explores how Pakistan is facing increased insecurity in various industries due to accelerating climate change, which is not its fault. To describe the effects in four important areas: water, agriculture, energy, and economic resilience, we rely on current research. When taken as a whole, these depict a depressing image of a country under attack from environmental changes that were mostly brought on by the emissions of others.

- **Water Security and Hydrological Risks**

Changes in the water cycle, which show themselves as melting glaciers, changing river flows, and extreme precipitation events, are arguably the biggest and most immediate risks facing Pakistan. The Himalayan-Karakoram glaciers, which supply water to Pakistan's rivers, are currently retreating due to warming temperatures. Significant glacial mass loss in the area during the previous few decades has been revealed by research. (Adnan et al., 2024b).

As glaciers and snowpack melt more quickly, the result is both increased runoff and flooding in the short term and a higher chance of long-term water shortages as these natural water towers decline. Glacial lake outburst floods (GLOFs) unleash torrents from breached glacial lakes, devastating downstream communities. These events, once considered rare, are now a regular concern in Gilgit-Baltistan and Khyber Pakhtunkhwa

provinces, driven by warmer temperatures and erratic precipitation patterns

At the other extreme, changes in monsoon dynamics are bringing unprecedented rainfall to some areas and drought to others. The 2022 super-monsoon is a case in point: southern Pakistan was deluged by rainfall amounts vastly above historical norms (in some places over 5 times the 30-year average), leading to apocalyptic floods (You et al., 2024). Climate attribution analyses show that such extreme rainfall was made far more likely by global warming. In fact, (Otto et al., 2023) found that climate change increased the intensity of Pakistan's 5-day maximum rainfall by up to approximately 50%, essentially loading the dice in favor of severe floods. The result was rivers like the Indus and its tributaries overflowing their banks on a massive scale. Conversely, in other years Pakistan has endured deficient monsoons and heat-driven droughts, stressing water supplies for agriculture and hydropower. The net impact on water security is alarming. Pakistan's per capita water availability has plunged, and it is now on the verge of being classified as water scarce. A study by (Hayat et al., 2022) on the snow-fed Chitral River catchment projects significant changes in streamflow under future warming, portending challenges for water management. Too much water at one time (floods) and too little at another (droughts) exemplify the increasing variability. These hydrological extremes directly threaten irrigation, drinking water supplies, and hydropower generation. For a largely arid to semi-arid country like Pakistan, the reliability of water from glacier melt and monsoon rains is paramount. Climate change, fueled by emissions from big polluters, is eroding that reliability. As a result, Pakistan faces a future of tougher water governance: needing more reservoirs and dams (and better operation of existing ones) to store excess floodwater for use in lean times (Adnan et al., 2024b) improved floodplain management, and transboundary water diplomacy (especially with upstream India) to handle more erratic flows.

#### • **Agricultural and Food Security**

Agriculture is the backbone of Pakistan's economy and the primary livelihood for millions. It is also extraordinarily climate-sensitive, being heavily reliant on predictable weather and water availability. The amplification of climate extremes due to global warming is undermining Pakistan's food security on multiple fronts. On one hand, intensifying heat and shifting rainfall are reducing crop yields; on the other, extreme events are outright destroying crops and rural infrastructure.

Heat stress is a growing concern. In the spring of 2022, for example, Pakistan (and northwestern India) experienced an unprecedented heatwave with temperatures soaring above 45 °C in March-April. This anomalous early-season heat, made about 30 times more likely by climate change according to attribution studies (Farah et al., 2023) wreaked havoc on the wheat crop, which was in the grain-filling stage. Such heatwaves are projected to become more common as India and China (among others) continue to pump GHGs into the atmosphere, raising regional temperatures. (Mahmood et al., 2021) note that farmers in Pakistan are already perceiving changes in climate patterns, with shifting growing seasons and more frequent drought periods forcing adaptation in cropping practices. Higher baseline temperatures also increase crop water requirements, straining irrigation resources in a country where canal systems and groundwater are stretched thin.

Meanwhile, the flooding end of the spectrum presents catastrophic risks to agriculture. The 2022 floods submerged vast areas of farmland, as described in post-disaster assessments (Akthar & Reid, 2024). Sindh and Punjab saw millions of acres of cropland drowned. The losses to the agricultural sector were estimated in the billions of dollars, with long-term impacts as well: topsoil erosion, waterlogging, and sediment deposition have impaired soil fertility in some areas. The flooding also decimated livestock herds, a critical component of rural food security and income. Beyond floods, erratic monsoons can also cause pest outbreaks and plant diseases.

All these factors combine to threaten Pakistan's food security. The country has already slid from wheat self-sufficiency to net imports in some years, partly due to climate-induced yield stagnation. Rural communities face not only reduced crop output but also increased uncertainty, making planning for the next season a fraught exercise. Climate change is thus reinforcing cycles of rural poverty and undermining efforts at sustainable agriculture. (Shahzad & Amjad, 2022) caution that irregular rainfall and water shortages are reducing crop yields, worsening food insecurity, and could wipe out hard-won gains in agricultural productivity. Ensuring food security in this climate-altered reality will require climate-smart agriculture: developing heat/drought-resilient crop varieties, adjusting sowing dates, improving irrigation efficiency, and establishing grain reserves for extreme years. However, these adaptation measures, while crucial, become ever more challenging as the magnitude of climate stressors increases. Ultimately, stabilizing the climate through global emissions cuts (by the big emitters) is an indispensable piece of the puzzle to safeguard Pakistan's agricultural future.

#### • **Energy and Infrastructure**

Climate insecurity in Pakistan is also increasingly evident in the energy sector. A reliable energy system in Pakistan depends on stable water flows for hydropower, tolerable temperatures for power transmission efficiency, and resilient infrastructure to withstand extreme events. Climate change is undermining each of these prerequisites, often indirectly via water-related impacts.

Hydropower constitutes a significant share of Pakistan's electricity generation (around 25–30% in recent years). The performance of hydropower dams like Tarbela and Mangla is intimately tied to river flow regimes, which, as discussed, are becoming more erratic. In years of glacial melt surge and heavy monsoon (such as 2022), dams face the paradox of too much water too quickly, leading to emergency discharges that can exacerbate downstream flooding and prevent full capture of the resource. In drought years, conversely, reduced river inflows mean less hydropower output, contributing to electricity shortfalls. (Hashmi et al., 2020) projected that climate change would alter the flow regime of the Kabul River, potentially disrupting the timing of water availability for dams. In practical terms, this volatility means Pakistan's hydropower potential could be underutilized or overly stressed, complicating energy planning. It also motivates costly investments in new dams and reservoirs to buffer these fluctuations, projects that are difficult to execute under tight budgets and political constraints.

Thermal power plants (coal, gas, oil), which form the backbone of Pakistan's power supply, are not immune either. Extreme heat reduces the efficiency of gas turbines and can cause derating of power plants. Moreover, during heatwaves, electricity demand for cooling soars, often leading to load shedding (planned outages) when generation cannot meet the spike. Pakistan's notorious summer blackouts have been exacerbated by recent heat extremes; for instance, during the 2022 spring heatwave, power demand surged and generation faltered as water shortages limited hydropower and some plants struggled with cooling issues. Transmission and distribution infrastructure also suffer: high temperatures can cause transmission lines to sag and even trip, while intense winds and floods physically damage poles, wires, and transformers. The 2022 floods wiped out sections of the grid in Sindh and Balochistan, leaving millions without power for extended periods. (Akthar & Reid, 2024)

Beyond electricity, climate impacts are evident in Pakistan's overall infrastructure resilience. Roads, bridges, dams, and power stations constructed decades ago were not designed for the intensity of events now being witnessed. For example, floodwaters in 2022 breached major dikes and dams, inundated coal mines (halting fuel supply to power plants), and submerged grid substations (Akthar & Reid, 2024). The economic toll on the energy sector alone ran into hundreds of millions of dollars in repairs and lost revenue. In coastal areas, rising sea levels and storm surges (a risk as cyclones potentially become more intense



with warming) threaten energy infrastructure like Karachi's port (critical for oil imports) and coastal power plants.

In essence, the cascade from India-China emissions to Pakistani energy insecurity is mediated by climate extremes. More GHGs mean a hotter, more moisture-variable climate, which in turn means a more brittle energy system in countries like Pakistan lacking climate-resilient design. Pakistan will need to climate-proof its energy infrastructure: elevating and reinforcing grid equipment in flood-prone zones, improving heat tolerance of systems, and diversifying energy sources (including more decentralized renewables that are less prone to large-scale failure). Ironically, investing in renewables like solar and wind is both a mitigation and adaptation strategy: they reduce reliance on water-intensive power generation and add redundancy. As Pakistan pursues a target of 60% renewables by 2030, this could enhance energy security in the face of climate volatility. Yet, without global mitigation, the scale of climate change could outpace such adaptation measures, leaving Pakistan's energy infrastructure perpetually on the back foot.

#### • **Economic Resilience and Development**

The cumulative impacts on water, agriculture, energy, health, and displacement all circle back to one overarching concern: Pakistan's economic resilience. Climate insecurity is increasingly undermining Pakistan's development gains and macroeconomic stability. Extreme climate events cause direct economic damages to infrastructure, crops, and property, while also siphoning government funds towards relief and reconstruction, often at the expense of long-term investment. The 2022 floods alone inflicted an estimated \$15.2 billion in damages and economic losses (Akthar & Reid, 2024), a colossal hit for an economy already reeling from fiscal deficits and external debt. This included destruction of roads, bridges, power lines, schools, and hospitals, requiring massive capital to rebuild. Such recurring losses act as a drag on GDP growth. Studies have shown that climate-related disasters can shave off percentage points from Pakistan's annual GDP, keeping it stuck in a cycle of rebuild and recover.

Beyond disasters, gradual climate shifts strain economic productivity. Agriculture's travails directly affect GDP (as agriculture is ~20% of GDP) and rural incomes. In years of poor harvest, Pakistan spends more on food imports, worsening its trade balance and depreciating the currency. Energy shortfalls due to climate extremes can hamper industrial output, e.g. factories forced to halt during prolonged power outages or when water scarcity limits hydro and cooling for thermal plants. All these contribute to what some economists term "climate-induced economic uncertainty" (Usman et al., 2024). It is noted that countries like Pakistan face a compounded risk: high vulnerability to climate change can deter foreign investment and divert domestic resources to climate adaptation rather than growth-enhancing projects. Indeed, after the 2022 floods, Pakistan had to reallocate budget and also seek international aid and loans to fund reconstruction, adding to its debt burden.

Climate change also poses risks to Pakistan's long-term development strategy. For example, the China-Pakistan Economic Corridor (CPEC), a collection of infrastructure projects intended to boost Pakistan's economy, could see its benefits eroded if climate impacts are not considered. New highways or railways could be washed away by floods if not designed for future climate extremes; new power plants could become stranded assets in a world rapidly transitioning away from fossil fuels. Thus, climate resilience must be baked into development planning to ensure sustainability. The concept of "climate-resilient development" is gaining traction, emphasizing that development goals (poverty reduction, industrialization, etc.) and climate adaptation/mitigation should be pursued in tandem (Adnan et al., 2024b). For Pakistan, this means that initiatives like building dams, introducing crop insurance, reforming water management, and diversifying energy sources are not just environmental policies but core economic policies for stability and growth. However, Pakistan's capacity to implement such measures is limited by

financial constraints, a point it has raised on the international stage.

#### **Regional Policy Gaps and Institutional Challenges**

South Asia has failed to establish an integrated and efficient climate security governance framework, despite its common geography and climate vulnerability. Even though organizations like the South Asian Association for Regional Cooperation (SAARC) may help states to work together, their participation in climate-related coordination is little, dispersed, and primarily symbolic.

##### **1. Institutional Limitations of SAARC**

The structure of SAARC has drawbacks. Because the organization is based on the consensus concept, growth is dependent on all member states agreeing, which is improbable given the ongoing animosity between India and Pakistan. Summits have been repeatedly canceled as a result, and there is a lack of strong policy harmonization on transboundary problems like financing for climate adaptation, early warning systems, and river management.

An Action Plan on Climate Change was approved by SAARC in 2008, however it was never implemented. The SAARC Climate Change Fund and other allocated instruments are underfunded and do not operate. Although it is clearly obvious that climate-related calamities like monsoon floods, droughts, and glacial lake eruptions have regional ramifications, the organization has not even created a significant regional framework for climate security.

##### **2. Geopolitical Rivalries and the India-Pakistan Freeze**

One of the main causes of the absence of a regional framework for climate security is the current political impasse between India and Pakistan. Regional environmental diplomacy has often been paralyzed by bilateral disagreements that have often spilled over into international venues. Due to rising border tensions and terrorism accusations, confidence-building measures (CBMs), which were implemented through Track-II channels (such the Neemrana Dialogue) in the early 2000s, have been scaled back or discontinued in later years.

Cooperation on shared river basins under the Indus Waters Treaty (IWT), which is becoming more and more strained due to water scarcity and hydropower development, is also limited by this breakdown in bilateral trust. This system is made more complex by climate change, as hydro-political tensions are heightened by glacial melt and altered rainfall patterns. However, neither nation has effectively incorporated risk-sharing or climate science into their frameworks for water diplomacy.

##### **3. Lack of Track-II and Regional Science Diplomacy**

Instead of being institutionalized locally, efforts at Track-II diplomacy and scientific cooperation on climate concerns have been inconsistent and mostly donor-driven. In South Asia, think tanks and academic networks have suggested collaborative research projects like disaster data-sharing systems or climate-resilient agriculture, but these haven't resulted in official policy frameworks or results that boost trust. The potential for comprehensive regional frameworks is further constrained by China's bilateral rather than regional climate engagement and its absence from SAARC.

#### **Policy Recommendations:**

##### **1. Institutionalize Climate Security within SAARC**

SAARC should be reactivated with a focus on shared climate risks. Pakistan should advocate for a revised SAARC Climate Security Agenda that includes:

- Transboundary disaster early warning systems (IUCN, 2020)
- Hydrological data-sharing agreements for river basins (Pande, 2019)
- Climate-adaptive regional development plans

##### **2. Initiate a Regional Dialogue on Emissions Impact**

Pakistan can propose voluntary regional climate impact assessments to gauge the transboundary effects of China and

India's emissions. This would enhance regional transparency even without binding mitigation commitments (Li et al., 2025).

### 3. Leverage International Forums for Climate Justice

Pakistan should amplify its framing of "climate victimhood" at UNGA, COP summits, and through the Loss and Damage Fund under the UNFCCC. This aligns with calls from climate-vulnerable countries for equity-based climate finance (UNFCCC, 2022) (Rehman, 2022).

### 4. Integrate Climate Security into National Strategy

A National Climate Security Strategy should be adopted, with components such as:

- National Security Council involvement in climate disaster response (Munir, 2023)
- Climate threat modeling in defense and infrastructure planning
- A cross-ministerial Climate Security Task Force

### 5. Promote Regional Science Diplomacy

Pakistan should initiate joint climate resilience projects and Track-II scientific cooperation with India and China. This can lay groundwork for long-term climate peacebuilding through shared knowledge platforms (Bhatta, 2021)

### Conclusion:

South Asia's climate insecurity is not only a consequence of geography or emissions but is politically constructed, asymmetrically felt, and ill-governed. Regional carbon giants China and India are following growth-led climate models. Pakistan, on the other hand, positions itself as a climate victim, ever more securitizing climate risks to gather global seriousness and assistance.

This research has demonstrated that securitization theory provides a robust tool to make sense of these conflicting discourses. Securitization, however, without cooperation potentially deepens perception gaps and fuels geopolitical tensions. SAARC's institutional failure, along with the breakdown of India-Pakistan dialogue, created a vacuum in climate governance that Pakistan attempts to address through diplomatic entreaties and security framing.

To advance, Pakistan needs to reconcile securitization with positive engagement. By asserting its cooperative adaptation frameworks, integrating national climate resilience, and riding its moral lever in international diplomacy, Pakistan can decrease its exposure and enhance its strategic position in the regional climate regime.

### References:

1. Address by Prime Minister of Pakistan at the 77th UN General Assembly. (n.d.). UNGA. <https://gadebate.un.org/en/77/pakistan>
2. Adnan, M., Xiao, B., Bibi, S., Xiao, P., Zhao, P., & Wang, H. (2024). Addressing current climate issues in Pakistan: An opportunity for a sustainable future. *Environmental Challenges*, 15, 100887. <https://doi.org/10.1016/j.envc.2024.100887>
3. Akhtar, T. M., & Reid, M. J. A. (2024). The Urgency of Climate-Resilient Health Systems in Pakistan: Lessons From the 2022 Floods. *International Journal of Public Health*, 69, 1607981. <https://doi.org/10.3389/ijph.2024.1607981>
4. Bhatta, C. (2021). Why SAARC is Irrelevant for Climate Governance. *South Asian Voices*. <https://southasianvoices.org>
5. COP27 Proceedings – Pakistan Delegation Statement. United Nations Framework Convention on Climate Change. (2022). UNFCCC. <https://unfccc.int>
6. Dubash, N. K. (2023). Rebalance attention from global target setting toward national climate politics and policy. *Science*, 382(6666), Article 6666. <https://doi.org/10.1126/science.adk7428>
7. Eroukhanoff, C. (2018). Securitisation Theory: An Introduction. *An Introduction*.

8. Farah, N., Siddiqui, S., Afzal, S., Gillani, S. M. A., & Touseef, M. (2023). *CLIMATE-INDUCED MIGRATION AND ASSOCIATED RISKS IN PAKISTAN: A SYSTEMATIC REVIEW* (No. 12). 12, Article 12.
9. Floyd, R. (2010). *Security and the Environment: Securitisation Theory and US Environmental Security Policy* (1st ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511730146>
10. Haibin, Z. (2012). *Climate Change and China's National Security*.
11. Haider, Z. (2022). *India-Pakistan Rivalry and Regional Inertia on Climate Policy*.
12. Hashmi, M. Z. U. R., Masood, A., Mushtaq, H., Bukhari, S. A. A., Ahmad, B., & Tahir, A. A. (2020). Exploring climate change impacts during first half of the 21st century on flow regime of the transboundary Kabul River in the Hindukush region. *Journal of Water and Climate Change*, 11(4), Article 4. <https://doi.org/10.2166/wcc.2019.094>
13. Hayat, H., Tahir, A. A., Wajid, S., Abbassi, A. M., Zubair, F., Hashmi, Z. U. R., Khan, A., Khan, A. J., & Irshad, M. (2022). Simulation of the meltwater under different climate change scenarios in a poorly gauged snow and glacier-fed Chitral River catchment (Hindukush region). *Geocarto International*, 37(1), Article 1. <https://doi.org/10.1080/10106049.2019.1700557>
14. Hopf, T. (2010). The logic of habit in International Relations. *European Journal of International Relations*, 16(4), Article 4. <https://doi.org/10.1177/1354066110363502>
15. Lai, H. (2021). The evolution of China's climate change policy: International and domestic political economy and a strategy for working with China. *Journal of the British Academy*, 9s10, 69–98. <https://doi.org/10.5871/jba/009s10.069>
16. Li, Z., Zhang, X., He, J., Wang, H., Dong, W., Du, E., Chang, S., Ou, X., Guo, S., Tian, Z., Gu, A., Teng, F., Hu, B., Yang, X., Chen, S., Yao, M., Yuan, Z., Zhou, L., Zhao, X., ... Zhang, D. (2022). Towards carbon neutrality: A study on China's long-term low-carbon transition pathways and strategies. *Environmental Science and Ecotechnology*, 9, 100134. <https://doi.org/10.1016/j.esc.2021.100134>
17. Mahmood, N., Arshad, M., Mehmood, Y., Faisal Shahzad, M., & Kächele, H. (2021). Farmers' perceptions and role of institutional arrangements in climate change adaptation: Insights from rainfed Pakistan. *Climate Risk Management*, 32, 100288. <https://doi.org/10.1016/j.crm.2021.100288>
18. Munir, S. (2023). *Climate Insecurity in South Asia: A Strategic Framing*.
19. Otto, F. E. L., Zachariah, M., Saeed, F., Siddiqui, A., Kamil, S., Mushtaq, H., Arulalan, T., AchutaRao, K., Chaithra, S. T., Barnes, C., Philip, S., Kew, S., Vautard, R., Koren, G., Pinto, I., Wolski, P., Vahlberg, M., Singh, R., Arrighi, J., ... Clarke, B. (2023). Climate change increased extreme monsoon rainfall, flooding highly vulnerable communities in Pakistan. *Environmental Research: Climate*, 2(2), Article 2. <https://doi.org/10.1088/2752-5295/acbfd5>
20. Pakistan Floods Emergency Recovery Project. (2010). World Bank. <https://www.worldbank.org>
21. Pan, J., & Sun, T. (2023). Understanding the Nature and Rationale of Carbon Neutrality. *Chinese Journal of Urban and Environmental Studies*, 11(02), Article 02. <https://doi.org/10.1142/S2345748123500124>
22. Pande, A. (2019). *Climate Diplomacy in South Asia: The Role of Track II Dialogues*. Carnegie Endowment for International Peace. (n.d.).
23. Post-Disaster Needs Assessment: Pakistan 2022 Floods. (2022). UNDP.



24. Rehman, S. (2022). 'Dystopia on the Doorstep.' *Pakistan's Climate Minister Warns the Global North Is Next* [Interview]. <https://time.com/6218276/pakistan-floods-climate-minister/>
25. Shahzad, N., & Amjad, M. (2022). Climate Change and Food Security in Pakistan. In W. Leal Filho, M. Kovaleva, & E. Popkova (Eds.), *Sustainable Agriculture and Food Security* (pp. 579–594). Springer International Publishing. [https://doi.org/10.1007/978-3-030-98617-9\\_33](https://doi.org/10.1007/978-3-030-98617-9_33)
26. Sheikh, A. T. (2024, April 13). Climate governance revisited. *Dawn*. <https://www.dawn.com/news/1827155>
27. Usman, U., Yang, X., & Nasir, M. I. (2024). Role of climate change in economic uncertainty of Pakistan: New approach with qualitative comparative analysis. *Heliyon*, 10(24), Article 24. <https://doi.org/10.1016/j.heliyon.2024.e40889>
28. Wang, T., Song, Z., Zhou, J., Sun, H., & Liu, F. (2022). Low-Carbon Transition and Green Innovation: Evidence from Pilot Cities in China. *Sustainability*, 14(12), Article 12. <https://doi.org/10.3390/su14127264>
29. You, Y., Ting, M., & Biasutti, M. (2024). Climate warming contributes to the record-shattering 2022 Pakistan rainfall. *Npj Climate and Atmospheric Science*, 7(1), Article 1. <https://doi.org/10.1038/s41612-024-00630-4>

SCRR