

## **The Role of International Cooperation and Climate Finance in Supporting Climate Change Adaptation and Mitigation Efforts in the Global South**

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### **Abstract**

Climate change poses a grave and escalating threat, particularly to the developmental journey of nations in the Global South, South Asia being among the most critically affected regions. The region is already grappling with the devastating consequences of rising sea levels, erratic weather patterns, intensifying natural disasters, shifts in rainfall, and growing resource scarcity. These impacts are projected to worsen significantly in the coming decades. For millions living in poverty across South Asia, the risks are especially profound, as climate change exacerbates existing vulnerabilities and deepens socio-economic inequalities. Entire communities have been displaced, livelihoods destroyed, and basic human rights compromised. Addressing this crisis calls for immediate and united global action, where international collaboration and effective climate finance mechanisms are essential. This paper explores how cross-border cooperation and financial support are shaping climate adaptation and mitigation strategies in South Asia. It critically examines key components of the current global climate finance infrastructure, including the Green Climate Fund, the Climate Investment Funds, and the Global Environment Facility, evaluating their capacity to serve the region's most at-risk populations. The analysis also delves into pressing challenges such as the need for enhanced transparency, stronger accountability, and genuine local ownership of climate initiatives. Importantly, this paper underscores that climate justice is not only an environmental necessity but a fundamental human rights obligation. Ensuring that vulnerable communities in South Asia are prioritized in climate action is both a moral and practical imperative. By reinforcing solidarity and fairness through international cooperation and targeted climate finance, the global community can help foster a more resilient, equitable, and sustainable future for all.

**Keywords:** Climate Change & South Asia, Climate Finance, International Cooperation, Adaptation & Mitigation, Human Rights & Sustainable Future.

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**Introduction**

The climate crisis stands as one of the most urgent and complex challenges of our time. Its far-reaching effects transcend national borders, influencing everything from food security and water availability to economic stability and public health. As temperatures rise, glaciers melt, and weather patterns become increasingly erratic, communities around the world, particularly those in already vulnerable regions, are experiencing unprecedented disruptions to their way of life. While the crisis is global in nature, its impacts are deeply uneven. The nations least responsible for the accumulation of greenhouse gases often bear the heaviest burdens of climate change.

This reality brings into focus the need to understand climate vulnerability through a more nuanced lens, especially when considering the Global South. The term "Global South" is not merely a geographical categorization but rather a political and economic construct that highlights historical inequalities, colonial legacies, and systemic underdevelopment. It refers to those countries, primarily in Asia, Africa, and Latin America, that have historically been marginalized in global decision-making processes and continue to face structural disadvantages in the international order. These regions often have limited resources to prepare for or respond to the consequences of climate change, making them particularly dependent on international support, climate finance, and cooperative mechanisms.

Within this broader Global South context, South Asia stands out as a region that is both highly vulnerable and critically important in the global climate discourse. Home to more than a fifth of the world's population, South Asia experiences an alarming frequency of climate-induced disasters, ranging from devastating floods and prolonged droughts to heatwaves and sea-level rise. The region's high population density, dependence on agriculture, and existing socio-economic disparities compound its vulnerability. India, Bangladesh, Nepal, Sri Lanka, Pakistan, and the Maldives are all on the frontlines of the climate emergency, but each with its own unique set of challenges and opportunities.

**Objectives of the Study**

The primary aim of this study is to critically examine the role of international cooperation and climate finance in supporting climate adaptation and mitigation efforts in Global South, specifically in South Asia. It seeks to understand how financial and institutional mechanisms,

particularly those stemming from international partnerships, have influenced the region's ability to respond to climate threats.

Furthermore, this study aims to evaluate the effectiveness of global and regional institutions in delivering meaningful support to vulnerable populations and explore how these partnerships can be strengthened to promote long-term resilience and sustainability.

### **Research Questions-**

To achieve these objectives, the study is guided by the following core questions:

1. How has international cooperation influenced climate adaptation and mitigation in South Asia?
2. What has been the role and impact of climate finance mechanisms in specific South Asian contexts?
3. What lessons can be drawn from regional cooperation bodies like SAARC and global actors like the World Bank and International Monetary Fund?

Through these inquiries, this study seeks to contribute to the broader discourse on climate justice, urging a rethinking of how support systems are structured and delivered to the most affected. In doing so, it underscores that climate action in South Asia is not just an environmental necessity but a deeply human one, demanding empathy, equity, and sustained international solidarity.

### **Literature Review**

Climate change represents a pressing global concern, but its ramifications are not uniformly distributed. Countries in the Global South, particularly in South Asia, find themselves disproportionately exposed to its effects despite contributing minimally to the underlying causes. This paradox of minimal culpability yet maximum vulnerability underpins much of the recent discourse on climate justice and international cooperation. Within this context, scholarly attention has increasingly turned to the mechanisms through which climate finance and multilateral collaboration support adaptation and mitigation efforts across this region.

### **Climate Vulnerability and Structural Inequity in the Global South**

Studies consistently highlight that the Global South suffers not only from the environmental consequences of climate change but also from historical and structural disadvantages that exacerbate their vulnerability (Ciplet et al., 2022). Regions such as South Asia are particularly affected due to high population densities, economic dependencies on agriculture, and underdeveloped infrastructure, all of which intensify the impact of extreme weather events, rising sea levels, and shifting precipitation patterns.

This disproportionate burden has given rise to a robust discourse around climate justice. Scholars such as Anantharajah and Setyowati (2022) argue that any meaningful climate response must consider the colonial legacies and systemic inequalities that persist in international environmental governance. Such perspectives position climate change not just as an ecological issue, but as a manifestation of enduring global power imbalances.

### **International Cooperation: Opportunities and Limitations**

At the core of international climate action lies the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, both of which aim to foster collective responsibility while acknowledging differing national capabilities. These frameworks, while significant in principle, have often struggled to translate their ambitions into actionable support for vulnerable regions like South Asia. Kaif and Sidique (2025) note that although these agreements mandate financial and technical assistance from wealthier nations, the execution is marred by vague accountability mechanisms and delayed disbursements.

Beyond global treaties, diplomatic channels and regional platforms like SAARC and BIMSTEC have attempted to facilitate cooperation. However, internal geopolitical frictions, particularly between major regional actors such as India and Pakistan, often hinder progress. Despite these challenges, efforts to build alternative partnerships through South-South cooperation, such as BRICS and the G-77, have shown potential for fostering knowledge-sharing and joint financing models, although their practical implementation remains limited (Clark, 2021).

### **Climate Finance in Theory and Practice**

Climate finance, intended to support both mitigation and adaptation, takes multiple forms, including grants, concessional loans, and green bonds. For countries in South Asia, grant-based funding remains critical due to fiscal constraints and limited institutional capacity to manage

complex financial instruments (IMF, 2024). Nevertheless, the current architecture of global climate finance, particularly mechanisms like the Green Climate Fund (GCF), has been criticized for bureaucratic hurdles that restrict access, especially for small island states and least-developed countries (Mori et al., 2019).

Despite a noticeable increase in total climate finance flows to South Asia over the past decade, the distribution remains heavily skewed toward mitigation projects, such as renewable energy infrastructure, rather than the more urgent needs of adaptation in vulnerable communities. This imbalance, as highlighted by Meraj and Hashimoto (2025), underscores a critical misalignment between fund allocation and actual regional priorities.

### **Context-Specific Challenges and Responses**

The region's heterogeneity necessitates tailored climate responses. For instance, Bangladesh has emerged as a global exemplar of community-based adaptation, leveraging both international finance and local agency to build resilience through early warning systems and climate-smart agriculture (Sultana et al., 2019). Kerala, in contrast, demonstrates how sub-national leadership and decentralized planning can enhance disaster response capacity when supported by international technical assistance (Ashalekshmi & Eapen, 2024). Meanwhile, the Maldives, due to its unique geographic vulnerabilities, illustrates the importance of grant-based finance and the geopolitical diplomacy of small island states in accessing support.

However, across all these contexts, common obstacles persist: difficulties in accessing and deploying international funds, insufficient engagement of local actors in project design, and an overemphasis on infrastructure-heavy interventions at the expense of long-term resilience strategies.

### **Critical Gaps and Forward-Looking Proposals**

The literature indicates that despite increasing awareness and funding commitments, a disconnect remains between the scale of climate finance needed and the systems currently in place to deliver it. Several scholars advocate for a shift toward more participatory, regionally embedded approaches. For example, the idea of a South Asia Climate Finance and Adaptation Consortium (SACFAC) has been proposed as a mechanism to pool regional resources, streamline access to funds, and promote locally grounded solutions (Kaif & Sidique, 2025).

Moreover, there is growing recognition that climate finance should be guided by justice rather than efficiency alone. This includes addressing power imbalances in donor-recipient relationships, promoting transparency, and ensuring that adaptation efforts are gender-inclusive and socially equitable (Anantharajah & Setyowati, 2022).

In sum, the evolving body of research on climate finance and international cooperation in South Asia underscores a critical transition, from top-down, donor-driven models toward more inclusive, locally anchored frameworks. The current literature collectively calls for a rethinking of both the financial tools and governance structures underpinning climate action. While institutions like the UNFCCC and the GCF provide essential platforms, their effectiveness hinges on deeper integration with regional realities and grassroots capacities. Only by centering justice, equity, and local agency can South Asia, and the Global South more broadly, hope to build climate resilience in a way that is both sustainable and just.

### **Theoretical Framework and Methodology**

Understanding the role of international cooperation and climate finance in the Global South, especially in the context of South Asia, requires grounding in robust theoretical frameworks that explain how and why nations work together in addressing shared global challenges. Climate change, by its very nature, demands transboundary solutions, making the study of cooperation and justice central to any meaningful inquiry in this field.

Several theoretical lenses guide this study. Regime theory, a key perspective in international relations, offers insight into how global norms, principles, and decision-making processes evolve around specific issues like climate change. It helps explain the formation of institutions such as the United Nations Framework Convention on Climate Change (UNFCCC), which provide the scaffolding for global climate negotiations and commitments. Regime theory emphasizes that cooperation can emerge even in an anarchic international system, provided that there is mutual interest, clear rules, and enforcement mechanisms.

Closely related is liberal institutionalism, which focuses on the role of international institutions in facilitating cooperation by reducing transaction costs, increasing transparency, and building trust among states. Through this lens, climate finance mechanisms, such as the Green Climate Fund or

initiatives from the World Bank, are not merely financial tools but vehicles for diplomacy, collaboration, and shared governance.

At the heart of this study is the principle of climate justice, which challenges to look beyond efficiency and effectiveness, and to ask who bears the costs and who benefits from climate interventions. Climate justice reframes the issue not just as an environmental or economic problem, but as a human rights imperative. This perspective underscores the historical responsibilities of the Global North and highlights the disproportionate burden faced by countries in the Global South, particularly low-income and climate-vulnerable regions such as Kerala, Bangladesh, Nepal, and the Maldives. The lens of climate justice insists that equity, fairness, and community agency be central to adaptation and mitigation efforts.

In applying these theories, this study pays particular attention to two fundamental concepts: adaptation and mitigation. While closely related, they represent distinct responses to climate change. Adaptation refers to efforts aimed at adjusting to actual or expected climate impacts, such as improving flood defense systems, shifting agricultural practices, or building climate-resilient infrastructure. Mitigation, on the other hand, involves reducing or preventing the emission of greenhouse gases, often through transitioning to renewable energy, enhancing carbon sinks, or improving energy efficiency. Together, these two strategies form the cornerstone of climate action, and both are crucial for regions like South Asia, where the immediate need to protect lives coexists with the long-term goal of reducing vulnerability.

### **Research Methodology**

This study adopts a qualitative research approach, as it seeks to explore how policies, institutions, and financial mechanisms intersect with lived experiences and regional dynamics. The qualitative lens allows for a deeper understanding of the context-specific factors that influence climate adaptation and mitigation, especially in diverse socio-political settings like those found across South Asia.

A case study methodology is employed to analyze three South Asian contexts in detail: Kerala (India), Bangladesh, and the Maldives. These cases were selected due to their high climate vulnerability, varying degrees of international engagement, and contrasting institutional responses. Kerala represents a sub-national example with strong governance structures; Bangladesh

exemplifies a nation with significant international support and local resilience strategies; and the third case adds depth by showcasing small island state (Maldives) perspective.

The research draws primarily on secondary data from reputable sources, including reports and databases from the UNFCCC, World Bank, International Monetary Fund (IMF), SAARC, Green Climate Fund, and peer-reviewed academic publications. These materials are analyzed to extract key themes, identify policy patterns, and assess the effectiveness of financial and cooperative instruments in real-world contexts.

By combining these theoretical perspectives with a rigorous, context-sensitive methodology, this study aims to contribute meaningfully to the understanding of climate governance in South Asia and advocate for more equitable and effective pathways toward resilience.

### **Climate Change and the Global South: A Contextual Overview**

Climate change is not just an environmental phenomenon; it is a deeply political and economic issue that starkly reveals the existing inequalities between and within nations. Nowhere is this imbalance more visible than in the Global South. Countries across Africa, Latin America, and Asia, despite contributing the least to historical greenhouse gas emissions, are bearing the brunt of the crisis (Ciplet et al., 2022). This disproportionate exposure is not merely a matter of geography or meteorology but is rooted in centuries of structural marginalization, colonial exploitation, and global economic inequalities (Anantharajah & Setyowati, 2022).

The vulnerability of the Global South is a multidimensional reality. Climate change magnifies existing social, economic, and political weaknesses. Poor infrastructure, weak institutional capacity, and widespread poverty make it more difficult for many of these countries to prepare for or recover from climate-induced disasters (Mori, Rahman, & Uddin, 2019). Moreover, the unequal responsibilities for climate change, where the Global North accounts for the vast majority of historical carbon emissions, highlight the unjust nature of current climate impacts. This has led to increasing demands for climate justice and compensation through mechanisms like “loss and damage” funding and more equitable access to climate finance (Ciplet et al., 2022; Kaif & Sidique, 2025).

Within this broader landscape, South Asia stands out as one of the most climate-vulnerable regions in the world. Home to over 1.9 billion people, the region is experiencing a convergence of multiple



climate risks, many of which are intensifying in scale and frequency (Clark, 2021). One of the most pressing challenges is the increasing variability of the monsoon, which forms the backbone of agricultural productivity in countries like India, Bangladesh, Nepal, and Sri Lanka. Shifts in monsoon timing and intensity have already started to impact food security and water availability, with devastating consequences for rural livelihoods (Meraj & Hashimoto, 2025; Behera, Haldar, & Sethi, 2023).

Rising sea levels pose another serious threat, particularly for low-lying and densely populated coastal areas in Bangladesh and parts of India, as well as the island nations like the Maldives. In Bangladesh alone, millions are projected to be displaced by coastal inundation and salinity intrusion in the coming decades. Meanwhile, glacial melt in the Himalayas, often referred to as the "Third Pole" due to its vast ice reserves, is accelerating. This poses both short-term risks of glacial lake outburst floods and long-term threats to water availability for millions who depend on Himalayan-fed River systems (Rijal et al., 2021; Pradhan, Shrestha, & Limmeechokchai, 2020).

Extreme weather events such as cyclones, floods, and heatwaves have also become increasingly common across the region. Events like the 2015 Chennai floods, the 2018 Kerala floods, and the 2022 heatwaves in India and Pakistan have underscored the human and economic toll of climate inaction. These events not only result in immediate destruction of infrastructure and lives but also trigger long-term social disruptions including migration, health crises, and economic stagnation (Anantharajah & Setyowati, 2022; Ojha et al., 2019).

Despite this high exposure to risk, climate adaptation efforts in South Asia have historically been under-financed and under-prioritized. International climate finance flows to the region remain significantly lower than what is needed to build resilient infrastructure, develop early warning systems, and promote sustainable agriculture and water management practices (Prasad & Sud, 2019; IMF, 2024). A major challenge lies in the complex bureaucratic processes involved in accessing global funds like the Green Climate Fund (GCF), which often favor countries with greater institutional capacity. As a result, many South Asian countries face difficulties in securing timely and adequate support for their adaptation needs (Meraj & Hashimoto, 2025).

There is a clear need for region-specific adaptation strategies that reflect the socio-cultural, geographic, and economic diversity within South Asia. Blanket solutions often fail to address the

nuances of local climate vulnerabilities. For example, what works in flood-prone Bangladesh may not be relevant for drought-prone parts of Pakistan or glacial regions in Nepal. Effective adaptation must therefore be rooted in local knowledge systems, decentralized governance, and inclusive decision-making. Local communities must be seen not just as beneficiaries of aid but as active agents in designing and implementing climate solutions (Ashalekshmi & Eapen, 2024; Sultana et al., 2019).

At the same time, regional cooperation remains underutilized. Platforms like the South Asian Association for Regional Cooperation (SAARC) have the potential to play a larger role in coordinating regional climate responses, facilitating knowledge exchange, and pooling resources. Strengthening such cooperation, along with greater accountability and equitable climate finance, is essential if the region is to build long-term resilience (Clark & Dolan, 2021; Zhang, Pang, & Qin, 2023).

In sum, the climate crisis in South Asia, and the Global South at large, demands urgent, tailored, and justice-driven responses. Recognizing the uneven burdens of climate change is the first step toward building a more equitable and sustainable future (Ciplet et al., 2022; Anantharajah & Setyowati, 2022).

### **International Cooperation Mechanisms**

Climate change is an inherently global challenge, its causes are transboundary, and its consequences are deeply interconnected. As such, no single country or region can tackle the climate crisis in isolation. International cooperation has therefore become the bedrock of global climate action. From formal multilateral treaties to regional partnerships and emerging alliances among developing countries, a wide array of mechanisms exists to coordinate responses, mobilize resources, and ensure that vulnerable nations, particularly in the Global South, are not left behind (Clark, 2021; Ciplet et al., 2022).

### **Global Climate Governance: UNFCCC and the Paris Agreement**

At the heart of international climate cooperation lies the United Nations Framework Convention on Climate Change (UNFCCC), established in 1992. The UNFCCC provides the foundational framework for negotiating collective action to combat climate change. Over the decades, it has

facilitated significant global milestones, including the Kyoto Protocol (1997) and the more comprehensive Paris Agreement (2015) (Kaif & Sidique, 2025).

The Paris Agreement marked a transformative moment in global climate governance. Unlike its predecessors, it emphasized a bottom-up approach where each country submits Nationally Determined Contributions (NDCs) outlining its mitigation and adaptation goals. The agreement also reaffirmed the principle of common but differentiated responsibilities, recognizing that while all countries must act, developed nations should lead and support the efforts of developing ones, particularly through climate finance, technology transfer, and capacity building.

For South Asian countries, the Paris Agreement has served as a platform to assert their vulnerabilities and press for greater support. However, many challenges remain in translating global commitments into meaningful action on the ground. Issues such as vague accountability mechanisms, underfunded financial pledges, and limited technical support have often undermined the impact of these global agreements in practice (Kaif & Sidique, 2025; Prasad & Sud, 2019).

### **Climate Diplomacy: Mobilizing Aid and Solidarity**

Climate diplomacy plays a crucial role in advancing the interests of the Global South, particularly in securing financial and technological support from wealthier nations. South Asian countries have increasingly used diplomatic channels to frame climate change as both an environmental and development issue (Anantharajah & Setyowati, 2022; Kaif & Sidique, 2025). Countries like Bangladesh and the Maldives have led global advocacy, positioning themselves as moral voices on climate justice. India, with its growing geopolitical influence, has also emerged as a key player in climate negotiations, advocating for equity in global responsibility while launching initiatives like the International Solar Alliance to promote renewable energy collaboration.

These diplomatic efforts have yielded some positive outcomes, such as increased attention to loss and damage financing and the establishment of new climate adaptation funds. However, many South Asian nations still face significant hurdles in accessing these resources due to bureaucratic complexities, weak institutional capacity, and shifting donor priorities (Mori, Rahman, & Uddin, 2019; Clark & Dolan, 2021).

**South-South Cooperation: BRICS and the G-77**

While much of the focus has been on North-South aid flows, South-South cooperation is becoming an increasingly important dimension of international climate collaboration. The BRICS grouping (Brazil, Russia, India, China, and South Africa) and the Group of 77 (G-77) have created spaces where developing countries can share resources, knowledge, and best practices in addressing climate risks (Kaif & Sidique, 2025).

For instance, BRICS has discussed launching its own green investment initiatives through the New Development Bank, which could offer climate finance tailored to the needs of member states. The G-77, on the other hand, has provided a powerful collective voice in climate negotiations, especially in pushing for equitable financing and greater representation of Global South concerns in multilateral forums (Anantharajah & Setyowati, 2022; Ciplet et al., 2022).

However, despite these promising platforms, the practical impact of South-South cooperation in South Asia remains limited. Funding and project implementation through these mechanisms are still in nascent stages, and the absence of strong institutional frameworks often results in delays and inefficiencies (Kaif & Sidique, 2025; Zhang, Pang, & Qin, 2023).

**Regional Cooperation: SAARC and BIMSTEC**

Regionally, South Asia has its own cooperation mechanisms, most notably the South Asian Association for Regional Cooperation (SAARC) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). Both have attempted to promote joint action on climate change, disaster management, and environmental sustainability.

SAARC, for example, established a SAARC Climate Change Action Plan and a Natural Disaster Rapid Response Mechanism. These initiatives recognize the shared vulnerabilities of South Asian nations and the potential for collective response. However, geopolitical tensions, particularly between India and Pakistan, have often paralyzed the effectiveness of SAARC as a regional body. Consequently, the implementation of climate strategies under SAARC has been slow and fragmented (Clark, 2021; Kaif & Sidique, 2025).

BIMSTEC, with a narrower geographic focus and more active agenda, shows more potential in facilitating energy cooperation, especially in areas like renewable energy and climate-resilient

infrastructure. Still, the lack of binding commitments and funding structures continues to limit the scope and scale of regional collaboration (Kaif & Sidique, 2025; Clark & Dolan, 2021).

### **Assessing Effectiveness in the South Asian Context**

The overall effectiveness of international cooperation mechanisms in South Asia presents a mixed picture. On one hand, global platforms like the UNFCCC and the Paris Agreement have legitimized South Asian climate concerns and secured some financial support (Kaif & Sidique, 2025; Clark, 2021). On the other, access to climate finance remains uneven, and implementation gaps persist (Clark & Dolan, 2021; Mori, Rahman, & Uddin, 2019).

South-South cooperation and regional initiatives offer promising alternatives but require stronger political commitment, clearer coordination mechanisms, and greater resource mobilization. The region also needs more decentralized engagement, where subnational actors, local communities, and civil society organizations are directly involved in cooperation and funding decisions.

In summary, while international cooperation mechanisms have laid the groundwork for addressing climate change in South Asia, much more needs to be done to ensure that these frameworks deliver justice-oriented, context-sensitive, and sustained climate action across the region (Kaif & Sidique, 2025; Anantharajah & Setyowati, 2022).

### **Climate Finance Landscape in South Asia**

Addressing the intensifying impacts of climate change in South Asia requires not only political will and policy innovation but also sustained and equitable financial investment. Climate finance plays a crucial role in supporting adaptation and mitigation initiatives, especially in regions like South Asia where climate vulnerability intersects with developmental challenges (Meraj & Hashimoto, 2025; Prasad & Sud, 2019). Over the past decade, climate finance has emerged as a pivotal instrument of international cooperation, yet its deployment across South Asia remains marked by significant gaps, bottlenecks, and structural limitations (Mori, Rahman, & Uddin, 2019; IMF, 2024).

### **Definitions and Instruments of Climate Finance**

Climate finance broadly refers to local, national, or transnational funding, drawn from public, private, and alternative sources, that is used to support climate-related activities. It aims to reduce

greenhouse gas emissions (mitigation) and help societies adapt to the adverse effects of climate change (adaptation) (IMF, 2022a; Pradhan, Shrestha, & Limmeechokchai, 2020).

There are several key financial instruments used in climate finance:

- **Grants** are non-repayable funds typically used for capacity building, pilot projects, and vulnerable community interventions. These are especially important for least developed and small island nations in South Asia (Kaif & Sidique, 2025; Anantharajah & Setyowati, 2022).
- **Concessional loans** are provided at below-market interest rates with flexible terms. These are often used for large infrastructure or renewable energy projects, balancing developmental needs with repayment obligations (Clark & Dolan, 2021; IMF, 2024).
- **Carbon credits** allow entities to earn and trade credits based on the reduction of emissions, under mechanisms like the Clean Development Mechanism (CDM). Though once active, this market has lost traction in recent years, with renewed interest under Article 6 of the Paris Agreement (Kaif & Sidique, 2025; Meraj & Hashimoto, 2025).
- **Green bonds** are debt instruments specifically earmarked for financing green projects, including energy efficiency, sustainable transport, and climate-resilient infrastructure. South Asian countries have started exploring these, with India and Bangladesh issuing sovereign green bonds in recent years (Behera, Halдар, & Sethi, 2023).

Each of these tools carries unique opportunities and risks. For South Asia, the emphasis has been on grants and concessional financing, given the region's development constraints and high vulnerability to climate shocks.

### **Key Actors in South Asia's Climate Finance Ecosystem**

A variety of international institutions and bilateral partners are involved in channeling climate finance to South Asia. The Green Climate Fund (GCF), established under the UNFCCC, remains the largest global climate finance vehicle. Several South Asian countries, including Bangladesh, Nepal, and the Maldives, have accessed GCF funds for adaptation and resilience-building projects. However, challenges in proposal development and meeting fiduciary standards often delay or limit access (Mori, Rahman, & Uddin, 2019; Kaif & Sidique, 2025).

The World Bank and the Asian Development Bank (ADB) have also played prominent roles in financing climate-smart infrastructure and energy projects across the region. The World Bank's Climate Investment Funds (CIF) and the ADB's Climate Change Operational Framework support low-carbon transitions through multi-year investment programs (Clark & Dolan, 2021; IMF, 2024). Similarly, the International Monetary Fund (IMF) has begun integrating climate risk into its fiscal policy guidance and lending programs, such as through its new Resilience and Sustainability Trust (RST).

In addition, bilateral donors such as Germany, Japan, the UK, and the Nordic countries continue to provide targeted climate finance through development cooperation frameworks. For example, Germany's GIZ has been active in supporting climate adaptation in Bangladesh and India, while Japan has provided concessional loans for flood protection and infrastructure in Sri Lanka and the Maldives.

Despite the presence of multiple actors, coordination among them remains a persistent challenge, often leading to fragmented projects and duplication of efforts.

### **Funding Challenges: Access, Absorptive Capacity, and Conditionalities-**

South Asian countries face three primary challenges in accessing and utilizing climate finance effectively:

1. **Access Barriers:** Navigating the complex application processes of international climate funds can be overwhelming, particularly for smaller countries with limited technical capacity. Requirements for detailed proposals, environmental and social safeguards, and robust monitoring frameworks often delay funding approvals (Mori, Rahman, & Uddin, 2019; Kaif & Sidique, 2025).
2. **Absorptive Capacity:** Even when funds are approved, many countries struggle to absorb and implement them efficiently. Institutional weaknesses, limited inter-agency coordination, and staffing constraints at the national and subnational levels can hinder timely execution. In countries like Nepal and Afghanistan, political instability further compounds these issues (Rijal et al., 2021; Prasad & Sud, 2019; IMF, 2024).

3. **Conditionalities and Donor Priorities:** Several climate finance flows, especially concessional loans and bilateral funding, come with policy conditions or strategic priorities that may not always align with recipient countries' immediate needs. In some cases, mitigation projects are prioritized over adaptation, despite the latter being more urgent for vulnerable populations in South Asia (Anantharajah & Setyowati, 2022; Ciplet et al., 2022; Meraj & Hashimoto, 2025).

To improve outcomes, there is a growing call for simplified access procedures, capacity-building support, and flexible financing that prioritizes community-based and locally-led initiatives (Sultana et al., 2019; Ashalekshmi & Eapen, 2024).

### **Climate Finance Flows to South Asia (2015–2025): An Overview**

Between 2015 and 2025, climate finance flows into South Asia have continued to grow, though not at the pace required to match the scale of climate vulnerability in the region (IMF, 2024; Meraj & Hashimoto, 2025). Based on consolidated reports from the UNFCCC, OECD, Climate Policy Initiative, and national budget data, South Asia is estimated to have received approximately \$65–70 billion in climate finance over the decade. While this marks a noticeable increase compared to previous periods, it remains substantially lower than the estimated need, which runs into several hundred billion dollars by 2030 (Prasad & Sud, 2019; Anantharajah & Setyowati, 2022).

- **India** has been the primary recipient, securing the bulk of the region's funding through large-scale investments in solar energy, green infrastructure, and smart city resilience. Its strategic partnerships with the World Bank, ADB, and bilateral donors like Germany and Japan have helped mobilize finance for both mitigation and adaptation, though much of it is in the form of loans rather than grants (Clark & Dolan, 2021; Kaif & Sidique, 2025).
- **Bangladesh** has made significant strides in accessing multilateral funds for adaptation, particularly from the Green Climate Fund (GCF) and UN Adaptation Fund, as well as bilateral donors. Projects have focused on coastal resilience, livelihood adaptation, and climate-smart agriculture. The government's proactive climate budgeting and the operationalization of the Bangladesh Climate Change Trust Fund have enhanced its ability to absorb and allocate funds (Sultana et al., 2019; Mori, Rahman, & Uddin, 2019).



- The **Maldives** has continued to receive targeted support for coastal protection, renewable energy, and freshwater security, mostly through grants. However, its small size and limited fiscal capacity remain barriers to accessing larger-scale funds, highlighting the need for simplified processes for Small Island Developing States (SIDS) (Kaif & Sidique, 2025; Anantharajah & Setyowati, 2022).
- **Nepal, Bhutan, and Sri Lanka** have secured modest but critical climate funding, mostly directed toward disaster risk reduction, forest conservation, and community-based adaptation. Nepal has also tapped into regional and international support for post-disaster climate resilience following recent monsoon-related flooding (Rijal et al., 2021; Pradhan, Shrestha, & Limmeechokchai, 2020).
- **Pakistan**, despite its high climate risk, has struggled with institutional challenges and political volatility, which have hampered its ability to access and implement climate finance at scale. Recent efforts to build capacity and reform project pipelines show promise, but the overall share remains low compared to its needs (Ciplet et al., 2022; Kaif & Sidique, 2025).

While the increased flow of climate finance between 2015 and 2025 is a positive trend, sectoral imbalance and inequitable distribution remain pressing concerns. A disproportionate share of funding has gone to mitigation, particularly renewable energy, while adaptation, which is often more urgent for the region's vulnerable communities, continues to be underfunded (Meraj & Hashimoto, 2025; Anantharajah & Setyowati, 2022). Moreover, private sector engagement in climate finance is still limited in South Asia due to perceived risks and regulatory uncertainty.

Moving forward, the region requires not just more funding, but better-targeted, predictable, and locally driven investments that center the needs of the most vulnerable. Climate finance must be reshaped as a justice-oriented tool, not just a capital flow, to help South Asian countries safeguard their futures in a warming world (Ciplet et al., 2022; Kaif & Sidique, 2025).

### **Case Studies**

To ground the analysis of climate finance and international cooperation in real-world contexts, this section presents three case studies from South Asia: Kerala (India), Bangladesh, and the Maldives.

These cases illustrate how international and local efforts converge, or fall short, in responding to the specific climate vulnerabilities of the region.

### **Kerala, India**

Kerala, situated along India's southwestern coast, has faced intensifying climate risks over the last decade. The floods of 2018 and 2019 were especially catastrophic, displacing over a million people, destroying thousands of homes, and disrupting livelihoods across 14 districts. These disasters were triggered by unusually intense monsoon rainfall, made worse by poor watershed management and unchecked development in ecologically sensitive areas (Ashalekshmi & Eapen, 2024).

In response, the state government received critical international support, including funding and technical assistance from the World Bank and the United Nations Development Programme (UNDP) (Clark & Dolan, 2021). The World Bank-backed Resilient Kerala Initiative, launched in 2020, focused on improving river basin management, rebuilding climate-resilient infrastructure, and developing real-time flood forecasting systems. UNDP supported disaster risk reduction programs and knowledge sharing on urban adaptation planning.

At the local level, Kerala has demonstrated strong leadership in adaptation through community-based disaster management, mobilizing local bodies like “panchayats” to map risks, coordinate evacuations, and manage relief camps. The state also initiated integrated river basin planning in vulnerable areas like the Pamba and Periyar basins to prevent unmanaged dam releases and better regulate hydrological flows (Ashalekshmi & Eapen, 2024).

Despite these efforts, several gaps remain. Financing bottlenecks, delays in project implementation, and fragmented institutional coordination have limited the impact of some interventions. Moreover, while Kerala has a robust disaster response system, long-term climate resilience planning, especially in urban areas and ecologically fragile zones, requires stronger institutional integration and access to direct climate finance at the subnational level (Prasad & Sud, 2019).

## **Bangladesh**

Bangladesh is globally recognized as one of the most climate-vulnerable countries, and yet it has emerged as a leader in adaptation and resilience-building. Its densely populated deltaic landscape faces a constant threat from rising sea levels, tropical cyclones, salinity intrusion, and flooding.

With substantial international backing, Bangladesh has implemented several large-scale adaptation projects. It has been a key recipient of Green Climate Fund (GCF) support, including for the Enhancing Adaptive Capacities of Coastal Communities Project, aimed at climate-resilient housing, freshwater supply, and agricultural diversification (Meraj & Hashimoto, 2025). Bilateral donors, particularly from Germany, the Netherlands, and the UK, have funded early warning systems, community-based adaptation, and embankment construction (Mori, Rahman, & Uddin, 2019).

One of the most notable programs has been the Coastal Embankment Improvement Project (CEIP), supported by the World Bank and the Japan International Cooperation Agency (JICA). The project reinforces sea-facing embankments, improves drainage, and introduces sustainable land-use management in vulnerable coastal zones (Mori, Rahman, & Uddin, 2019).

In parallel, institutional capacity has significantly improved. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the Climate Fiscal Framework have laid the groundwork for integrating climate priorities into national planning and budgeting (Prasad & Sud, 2019). At the community level, the success of local NGOs and community-based adaptation (CBA) approaches, like floating agriculture and cyclone preparedness committees, demonstrate the importance of local knowledge and ownership (Sultana et al., 2019).

However, challenges persist. Scalability remains a hurdle; many pilot projects do not move beyond the initial phase due to funding gaps, weak local government capacity, or dependency on external donors (Anantharajah & Setyowati, 2022). Sustainability is also a concern, particularly for infrastructure projects that require ongoing maintenance and long-term resource commitment (Anantharajah & Setyowati, 2022).

## **Maldives**

As the lowest-lying country in the world, the Maldives is on the frontline of sea-level rise, facing an existential threat (Kaif & Sidique, 2025). With an average elevation of just 1.5 meters, even

modest rises in sea levels pose risks to freshwater availability, coastal ecosystems, tourism infrastructure, and public health.

To confront these challenges, the Maldives has undertaken significant adaptation measures with international financial and technical support. Projects such as the Climate Resilient Islands Project, co-financed by the GCF and UNDP, focus on protecting shorelines, ensuring water security through rainwater harvesting, and implementing ecosystem-based adaptation techniques (Kaif & Sidique, 2025).

The government has also invested in hard infrastructure, such as elevated causeways and artificial islands, to safeguard economic hubs. For example, the capital Male is being protected by sea walls and coastal barriers funded through bilateral cooperation with Japan. Simultaneously, the country is exploring tourism diversification, shifting toward more eco-friendly and lower-impact development models to reduce environmental pressure and economic vulnerability (Anantharajah & Setyowati, 2022).

International cooperation has played a critical role. The Maldives has successfully accessed support from multilateral development banks, UN climate bodies, and bilateral donors. Its active participation in climate diplomacy, particularly within the Alliance of Small Island States (AOSIS), has helped it secure visibility and funding commitments (Anantharajah & Setyowati, 2022).

Yet, despite these gains, the Maldives continues to face serious obstacles. Funding remains short-term and project-specific, limiting the continuity of adaptation efforts (Ciplet et al., 2022). The high cost of climate-proofing infrastructure, combined with a narrow economic base, puts immense pressure on national planning and debt sustainability. Additionally, administrative capacity constraints at the local level often delay project execution (IMF, 2024).

### **Comparative Reflections**

These three case studies highlight both the potential and limitations of climate finance and international cooperation in South Asia. Kerala illustrates how decentralized governance and disaster preparedness can benefit from global support when tailored to local needs (Ashalekshmi & Eapen, 2024). Bangladesh demonstrates how a proactive national strategy and community ownership can amplify international funding (Meraj & Hashimoto, 2025). The Maldives, while

globally visible, underscores the urgency of sustained and flexible financing for nations facing existential climate risks (Kaif & Sidique, 2025).

What connects all three cases is the critical need for equitable, predictable, and accessible climate finance that aligns with each region's specific vulnerabilities and capacities. Success lies not just in securing funding, but in ensuring that it is implemented effectively, sustained over time, and responsive to local realities (Sultana et al., 2019; Anantharajah & Setyowati, 2022).

### **Assessment and Policy Recommendations**

The case studies of Kerala, Bangladesh, and the Maldives offer valuable insights into the current state of climate finance and adaptation efforts in South Asia. While international cooperation has enabled significant progress, these examples also expose persistent gaps in implementation, funding equity, and institutional capacity (Kaif & Sidique, 2025; Ashalekshmi & Eapen, 2024; Meraj & Hashimoto, 2025). To chart a path forward, it is essential to draw comparative lessons, identify systemic weaknesses, and develop context-specific policy recommendations that prioritize local agency and regional cooperation (Prasad & Sud, 2019).

### **Comparative Insights from the Case Studies**

A comparative assessment reveals both shared challenges and unique strengths across the three contexts. In Kerala, strong local governance and community-driven planning have contributed to effective disaster response, but limited direct access to international finance has slowed long-term resilience building (Ashalekshmi & Eapen, 2024). Bangladesh stands out for its institutional innovation, community-based adaptation, and proactive climate planning, supported by both multilateral and bilateral actors (Sultana et al., 2019). However, its over-reliance on short-term donor-driven projects highlights the need for sustainable, scalable solutions (Anantharajah & Setyowati, 2022). The Maldives, while benefiting from high-level international visibility and diplomatic leverage, faces capacity and resource limitations due to its small size and narrow economic base (Kaif & Sidique, 2025; IMF, 2024).

Despite different national contexts, all three face similar bottlenecks: delays in fund disbursement, limited local control over project design, fragmented coordination among agencies, and the underfunding of adaptation relative to mitigation (Meraj & Hashimoto, 2025; Ciplet et al., 2022).

### **Gaps in Implementation and Financing**

One of the most striking gaps is the mismatch between climate finance commitments and actual disbursements. Complex application processes, overlapping mandates of international donors, and the lack of readiness in national systems often cause long delays (Mori, Rahman, & Uddin, 2019; IMF, 2022a). While large sums are pledged globally, the pace of delivery to South Asia remains sluggish. This is further exacerbated by conditionalities tied to concessional loans, which can compromise fiscal space for developing countries already managing debt burdens (Clark & Dolan, 2021).

Equally problematic is the focus on infrastructure-heavy mitigation projects, primarily in the energy sector, at the expense of locally rooted adaptation strategies. Adaptation, which is most needed by the poorest and most vulnerable, receives a disproportionately small share of the region's climate finance (Anantharajah & Setyowati, 2022; Ciptet et al., 2022). Moreover, national ministries often struggle with absorptive capacity, and subnational actors, despite being on the front lines of climate impacts, are rarely included in funding frameworks or strategic decision-making (Prasad & Sud, 2019; Rijal et al., 2021).

### **The Importance of Regionally Embedded Strategies and Local Agency**

Addressing these issues requires a fundamental shift toward regionally embedded, bottom-up strategies. South Asia is not a monolith; its diverse geographies, cultures, and governance systems demand flexible, localized approaches. Successful examples from Kerala's River basin planning and Bangladesh's floating agriculture reinforce the idea that local knowledge and agency are central to effective adaptation (Ashalekshmi & Eapen, 2024; Sultana et al., 2019).

To make climate finance more impactful, funding structures must recognize and directly support local institutions and community-led initiatives. This includes simplifying access procedures, decentralizing decision-making, and embedding social inclusion into all project phases, from design to evaluation (Meraj & Hashimoto, 2025; Ciptet et al., 2022).

### **Role of Regional and Global Institutions**

Regional platforms like SAARC and BIMSTEC have the potential to foster shared learning, risk pooling, and coordinated action, yet their contributions to climate adaptation remain underdeveloped due to geopolitical constraints and funding limitations (Kaif & Sidique, 2025).

SAARC, in particular, has established useful frameworks, such as the SAARC Disaster Management Centre and the Climate Change Action Plan, but these initiatives require renewed political momentum and integration into national strategies (Clark, 2021).

At the broader geopolitical level, groupings like BRICS and the G-77 offer opportunities for South-South cooperation and financing (Clark, 2021; Zhang, Pang, & Qin, 2023). The New Development Bank under BRICS, for instance, could serve as a source of concessional finance for climate adaptation in South Asia. Global institutions like the World Bank, IMF, and GCF must continue to prioritize the region's unique vulnerabilities while aligning financial flows with justice-oriented principles (Ciplet et al., 2022; IMF, 2024).

### **Proposing a South Asia Climate Finance and Adaptation Consortium**

To bridge institutional and financial gaps, this paper proposes the creation of a South Asia Climate Finance and Adaptation Consortium (SACFAC). This regional mechanism would:

- Facilitate joint planning, project development, and proposal writing support.
- Serve as a pooled fund and technical assistance platform, offering grants to local governments and NGOs.
- Promote regional data sharing and climate risk mapping.
- Create a framework for collective negotiations with international donors, enhancing bargaining power and ensuring alignment with local priorities.

SACFAC would operate as a regional public good, governed by a rotating leadership from South Asian countries and supported by technical partners from both the Global North and South. It could function in partnership with SAARC or as a complementary institution, avoiding duplication and leveraging existing frameworks.

### **Policy Recommendations**

To ensure effective and equitable climate finance in South Asia, the following policy steps are essential:

1. **Strengthen Institutional Capacity and Transparency-** Capacity-building efforts should focus not only on central ministries but also on subnational and local institutions.

Transparent monitoring and reporting mechanisms must be embedded into all climate finance flows to enhance accountability and public trust.

2. **Prioritize Grants over Loans-** Given the high debt burdens and low fiscal resilience of many South Asian countries, international finance should shift toward grants and blended finance models. This is especially important for adaptation efforts that do not generate immediate financial returns.
3. **Establish Regional Climate Data and Risk-Sharing Networks-** The region lacks coordinated, high-quality climate data systems. A shared climate information platform, co-managed by South Asian governments and research institutions, would improve disaster preparedness, support early warning systems, and strengthen cross-border climate intelligence.

In conclusion, climate finance in South Asia must evolve from a fragmented, donor-driven model to a more cohesive, equitable, and regionally informed system. This demands not only stronger institutions and more responsive funding, but also a renewed commitment to climate justice and local empowerment. By institutionalizing cooperation and prioritizing adaptation for the most vulnerable, South Asia can take a decisive step toward a resilient, inclusive future.

## Conclusion

This study set out to examine the evolving landscape of climate finance and international cooperation in South Asia, with specific case analyses from Kerala, Bangladesh, and the Maldives. The findings reveal a complex interplay between global climate governance frameworks, national priorities, and local adaptation needs. While significant progress has been made in mobilizing resources and implementing adaptation projects, the gaps in equity, accessibility, and long-term sustainability remain pressing concerns.

A key takeaway from this research is that international cooperation has indeed played a pivotal role in enhancing climate resilience across South Asia. Global institutions such as the UNFCCC, Green Climate Fund, World Bank, and bilateral donors have provided essential funding and technical support for climate action. Yet, the mechanisms through which this support is delivered often suffer from inefficiencies, slow disbursement, and top-down frameworks that overlook the specific needs of communities most at risk.



The case studies reaffirm that context-sensitive, locally grounded strategies are indispensable. Kerala's community-based disaster management systems, Bangladesh's pioneering adaptation models, and the Maldives' infrastructure-centered responses all demonstrate the importance of aligning international assistance with local priorities and capacities. However, without regional coordination and sustained, predictable finance, particularly in the form of grants, these efforts risk being isolated and short-lived.

This reinforces the central argument of the paper: climate resilience in South Asia requires not only more international funding but smarter, fairer, and more regionally embedded use of those funds. Regional platforms like SAARC and BIMSTEC, alongside emerging South-South cooperation frameworks such as BRICS and the G-77, must be revitalized and repositioned to act as hubs for shared learning, joint investments, and diplomatic advocacy. The proposed South Asia Climate Finance and Adaptation Consortium (SACFAC) could offer a model to centralize and streamline these efforts, empowering countries in the region to collectively negotiate, coordinate, and deliver climate action.

Equally critical is the recognition that climate finance is a matter of justice, not charity. Equity must guide every stage of the process, from funding criteria and project design to implementation and impact assessment. This includes prioritizing adaptation in the most vulnerable regions, enhancing access for marginalized communities, and ensuring that gender, caste, and Indigenous identities are not overlooked in policy formulation and execution.

Looking ahead, there is a pressing need for further research on the urban resilience dimension of climate adaptation, especially as South Asia's cities face increasing climate stress due to rapid urbanization. Additionally, the gender-climate interface remains an underexplored but crucial area of study. Women and girls in South Asia are disproportionately affected by climate change, yet often lack representation in decision-making and benefit distribution. Investigating how climate finance mechanisms can be made more gender-responsive would greatly strengthen the region's resilience.

In closing, this research underscores that the path to climate resilience in South Asia must be collective, inclusive, and just. Only through integrated, regionally owned, and globally supported

strategies can the region hope to face the climate crisis not just with urgency, but with dignity and fairness.

## Statement

AI Tools like Research Rabbit, and Elicit has been used to enhance the quality of the research paper. Sentence structuring and grammatical corrections has been done using these AI tools.

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